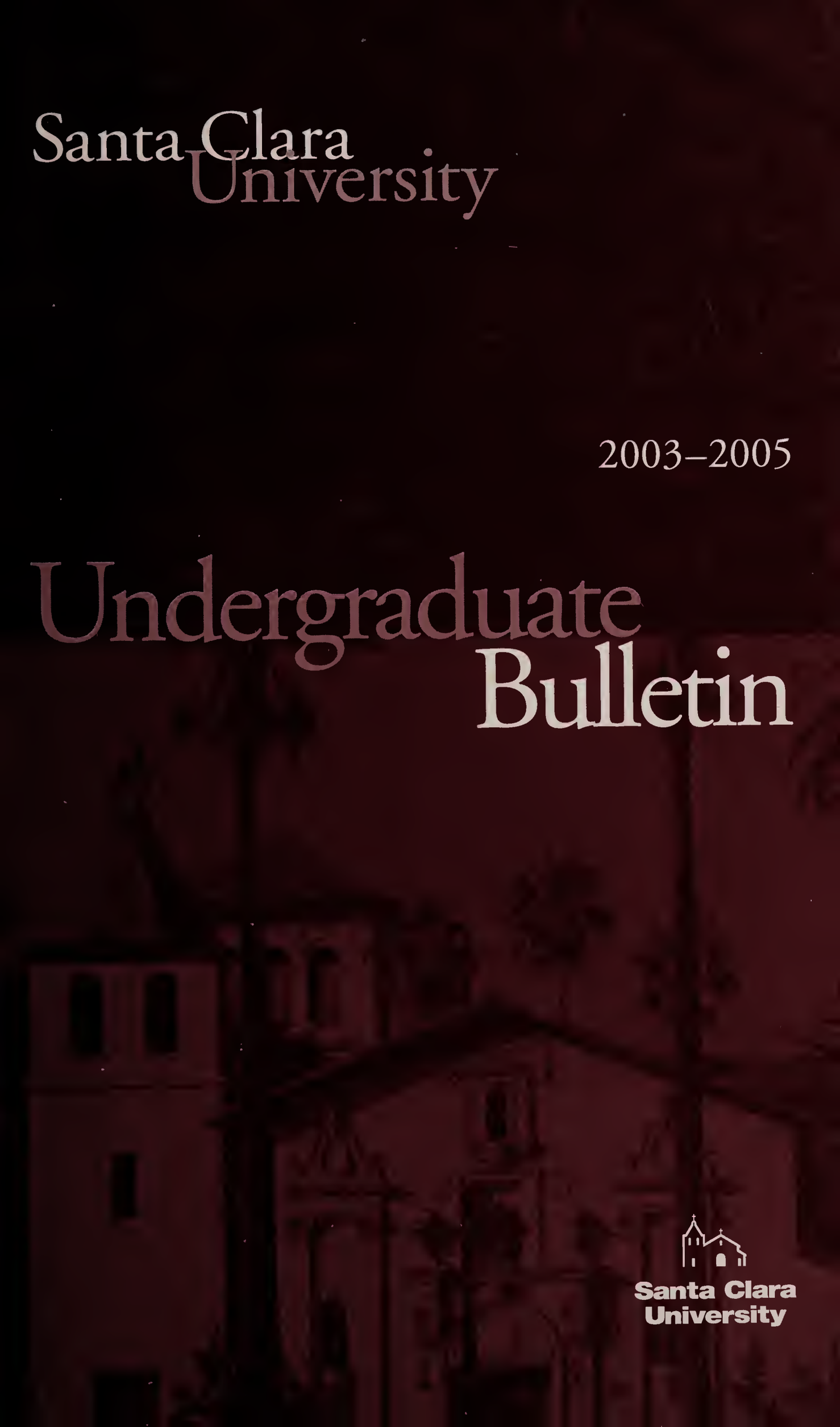
Santa Clara University

2003–2005

# Undergraduate Bulletin



Santa Clara University

## DIRECTIONS FOR CORRESPONDENCE

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**Enrollment Services**

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*Undergraduate Admissions*
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*Financial Aid*
Associate Director: Andrew P. Hagedorn
408-554-4505

*Students Records*
University Registrar: Carol J. Lamoreaux
408-554-4331

*Student Accounting Services*
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408-554-4412

**Religious Services**

*Campus Ministry*
Director: Mario Prietto, S.J.
408-554-4372

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*Alumni Affairs*
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408-554-6800

**Office of Communications and Marketing**

Director: Susan Shea
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**Library**

University Librarian: Elizabeth Salzer
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**Student Resources and Services**

*Student Life and Leadership*
Dean: Jeanne Rosenberger
408-554-4583

*Drahmann Advising and Learning Resources Center*
Director: Nedra G. Shunk
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*Housing and Residence Life*
Director: Linda Franke
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**Academic Programs**

*College of Arts and Sciences, Undergraduate Program*
Dean: TBD
408-554-4455

*Leavey School of Business, Undergraduate and Graduate Programs*
Dean: Barry Z. Posner
408-554-4523

*School of Engineering, Undergraduate and Graduate Programs*
Dean: Daniel A. Pitt
408-554-4600

*School of Law, J.D., LLM Degree Programs*
Dean: Donald Polden
408-554-4800

*School of Education, Counseling Psychology, and Pastoral Ministries, Graduate Programs*
Dean: Gerdenio Manuel, S.J.
408-554-7884

**Provost**

*Academic Affairs*
Provost: Denise Carmody
408-554-4533

# SANTA CLARA UNIVERSITY

## Undergraduate Courses and Degrees 2003–2005 Bulletin

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# Introduction

Students are bound by the University, core curriculum, and degree program requirements in the *Undergraduate Bulletin* of their entry year as freshman students (or, in the case of transfer students, in the *Undergraduate Bulletin* of their class cohort as determined by the number of transfer units accepted toward the Santa Clara degree). Students must normally fulfill the departmental major or program requirements in effect when they declare the major or program of study. If these requirements have been modified since the most recent printing of the bulletin, students may be required to fulfill those with the most recent date. Students are advised to consult the chair of the major department or the appropriate program director for the correct information.

Santa Clara University reserves the right to make program, regulation, and fee changes at any time without prior notice. The University strives to assure the accuracy of the information in this bulletin at the time of publication. However, certain statements contained in this bulletin may change or need correction.

# Academic Calendar 2003–2005

## FALL QUARTER 2003

| | | |
|---|---|---|
| May 5–16 | Monday–Friday | Annual academic advising period |
| May 19–30 | Monday–Friday | Fall registration period |
| July 7–22 | Monday–Tuesday | New student orientation and registration |
| September 12 | Friday | Transfer student orientation and registration |
| September 20–21 | Saturday–Sunday | New student Welcome Weekend |
| September 22 | Monday | Classes begin |
| September 22–26 | Monday–Friday | Late registration/add period |
| September 26 | Friday | Last day to declare P/NP grading option |
| October 8 | Wednesday | Student Planning Day; classes suspended |
| October 10 | Friday | Last day to submit incomplete spring quarter and summer session 2003 work to professors |
| October 17 | Friday | Last day to petition for degrees to be conferred in December 2003 |
| October 17 | Friday | Last day to withdraw from classes without a W grade |
| October 17 | Friday | Last day to remove spring quarter and summer session 2003 incompletes (faculty) |
| November 10–21 | Monday–Friday | Winter Registration period |
| November 21 | Friday | Last day to withdraw from classes |
| November 24–28 | Monday–Friday | Academic holiday |
| November 27–28 | Thursday–Friday | Thanksgiving recess; administrative holidays |
| December 5 | Friday | Classes end |
| December 8–12 | Monday–Friday | Fall quarter examinations |
| December 17 | Wednesday | Fall quarter grades due (faculty) |
| December 24–25 | Wednesday–Thursday | Christmas recess; administrative holidays |
| December 31–January 1 | Wednesday–Thursday | New Year's recess; administrative holidays |

## WINTER QUARTER 2004

| | | |
|---|---|---|
| November 10–21 | Monday–Friday | Winter registration period |
| January 2 | Friday | New student orientation and registration |
| January 5 | Monday | Classes begin |
| January 5–9 | Monday–Friday | Late registration/add period |
| January 9 | Friday | Last day to declare P/NP grading option |
| January 19 | Monday | Martin Luther King Day; academic and administrative holiday |
| January 23 | Friday | Last day to submit incomplete fall quarter 2003 work to professors |
| January 30 | Friday | Last day to petition for degrees to be conferred in March 2004 |
| January 30 | Friday | Last day to remove fall quarter 2003 incompletes (faculty) |
| January 30 | Friday | Last day to withdraw from classes without a W grade |
| February 16 | Monday | Presidents Day; academic and administrative holiday |
| February 17–27 | Tuesday–Friday | Spring registration period |
| February 27 | Friday | Last day to petition for degrees to be conferred in June 2004 |
| March 5 | Friday | Last day to withdraw from classes |
| March 12 | Friday | Classes end |
| March 15–19 | Monday–Friday | Winter quarter examinations |
| March 24 | Wednesday | Winter quarter grades due (faculty) |

## SPRING QUARTER 2004

| | | |
|---|---|---|
| February 17–27 | Tuesday–Friday | Spring Registration period |
| March 29 | Monday | Classes begin |
| March 29–April 2 | Monday–Friday | Late registration/Add period |
| April 2 | Friday | Last day to declare P/NP grading option |
| April 9 | Friday | Good Friday; academic and administrative holiday |
| April 16 | Friday | Last day to submit incomplete winter quarter 2004 work to professors |
| April 23 | Friday | Last day to petition for degrees to be conferred in September 2004 |
| April 23 | Friday | Last day to remove winter quarter 2004 incompletes (faculty) |
| April 23 | Friday | Last day to withdraw from classes without a W grade |
| May 3–14 | Monday–Friday | Annual academic advising period |
| May 18–28 | Monday–Friday | Fall 2004 registration period |
| May 28 | Friday | Last day to withdraw from classes |
| May 31 | Monday | Memorial Day; academic and administrative holiday |
| June 4 | Friday | Classes end |
| June 7–10 | Monday–Thursday | Spring quarter examinations |
| June 12 | Saturday | 153rd commencement |
| June 15 | Tuesday | Spring quarter grades due (faculty) |

## SUMMER SESSION 2004

### Summer Session I

| | | |
|---|---|---|
| April 12 | Monday | Summer advance registration begins (ecampus) |
| April 19–May 28 | Monday–Friday | Mail-in registration for non-SCU students |
| June 1–June 11 | Tuesday–Friday | In-person registration |
| June 14–21 | Monday–Monday | Late registration/add period |
| June 17 | Thursday | Classes begin |
| June 21 | Monday | Last day to declare P/NP grading option |
| July 2 | Friday | Last day to withdraw from classes without a W grade |
| July 4 | Sunday | Independence Day |
| July 5 | Monday | Administrative holiday |
| July 16 | Friday | Last day to withdraw from classes |
| July 21 | Wednesday | Classes end |
| July 22–23 | Thursday–Friday | Summer session I examinations |
| July 28 | Wednesday | Summer session I grades due (faculty) |

### Summer Session II

| | | |
|---|---|---|
| April 12 | Monday | Summer advance registration period begins (ecampus) |
| April 19–May 28 | Monday–Friday | Mail-in registration for non-SCU students |
| June 1–June 11 | Tuesday–Friday | In-person registration |
| June 14–July 28 | Monday–Wednesday | Late registration/add period |
| July 26 | Monday | Classes begin |
| July 28 | Wednesday | Last day to declare P/NP |
| August 9 | Monday | Last day to withdraw from classes without a W grade |
| August 20 | Friday | Last day to withdraw from classes |
| August 27 | Friday | Classes end |
| August 30–31 | Monday, Tuesday | Summer Session II examinations |
| September 6 | Monday | Labor Day, academic and administrative holiday |
| September 7 | Tuesday | Summer Session II grades due (faculty) |

## FALL QUARTER 2004

| | | |
|---|---|---|
| May 3–14 | Monday–Friday | Annual academic advising period |
| May 17–28 | Monday–Friday | Fall registration period |
| July 8–23 | Thursday–Friday | New student orientation and registration |
| September 10 | Friday | Transfer student orientation and registration |
| September 18–19 | Saturday, Sunday | New student Welcome Weekend |
| September 20 | Monday | Classes begin |
| September 20–24 | Monday–Friday | Late registration/add period |
| September 24 | Friday | Last day to declare P/NP grading option |
| October 6 | Wednesday | Student Planning Day; classes suspended |
| October 8 | Friday | Last day to submit incomplete spring quarter and summer session 2004 work to professors |
| October 15 | Friday | Last day to petition for degrees to be conferred in December 2004 |
| October 15 | Friday | Last day to withdraw from classes without a W grade |
| October 15 | Friday | Last day to remove spring quarter and summer session 2004 incompletes (faculty) |
| November 8–19 | Monday–Friday | Winter registration period |
| November 19 | Friday | Last day to withdraw from classes |
| November 22–26 | Monday–Friday | Academic holidays |
| November 25–26 | Thursday–Friday | Thanksgiving recess; administrative holidays |
| December 3 | Friday | Classes end |
| December 6–10 | Monday–Friday | Fall quarter examinations |
| December 15 | Wednesday | Fall quarter grades due (faculty) |
| December 24 | Friday | Christmas recess; administrative holiday |
| December 31 | Friday | New Year's recess; administrative holiday |

## WINTER QUARTER 2005

| | | |
|---|---|---|
| November 8–19 | Monday–Friday | Winter registration period |
| January 2 | Sunday | New student orientation/registration |
| January 3 | Monday | Classes begin |
| January 3–7 | Monday–Friday | Late registration/add period |
| January 7 | Friday | Last day to declare P/NP grading option |
| January 17 | Monday | Martin Luther King Day; academic and administrative holiday |
| January 21 | Friday | Last day to submit incomplete fall quarter 2004 work to professors |
| January 28 | Friday | Last day to petition for degrees to be conferred in March 2005 |
| January 28 | Friday | Last day to remove fall quarter 2004 incompletes (faculty) |
| January 28 | Friday | Last day to withdraw from classes without a W grade |
| February 14–25 | Monday–Friday | Spring registration period |
| February 21 | Monday | President's Day; academic and administrative holiday |
| February 25 | Friday | Last day to petition for degrees to be conferred in June 2005 |
| March 4 | Friday | Last day to withdraw from classes |
| March 11 | Friday | Classes end |
| March 14–18 | Monday–Friday | Winter quarter examinations |
| March 23 | Wednesday | Winter quarter grades due (faculty) |

## SPRING QUARTER 2005

| | | |
|---|---|---|
| February 14–25 | Monday–Friday | Spring registration period |
| March 25 | Friday | Good Friday; administrative and academic holiday |
| March 29 | Tuesday | Classes begin |
| March 29–April 4 | Tuesday–Monday | Late registration/add period |
| April 4 | Monday | Last day to declare P/NP grading option |
| April 15 | Friday | Last day to submit incomplete winter quarter 2005 work to professors |
| April 22 | Friday | Last day to remove winter quarter 2005 incompletes (faculty) |
| April 22 | Friday | Last day to withdraw from classes without a W grade |
| April 29 | Friday | Last day to petition for degrees to be conferred in September 2005 |
| May 2–13 | Monday–Friday | Annual academic advising period |
| May 16–27 | Monday–Friday | Fall 2005 registration period |
| May 27 | Friday | Last day to withdraw from classes |
| May 30 | Monday | Memorial Day; academic and administrative holiday |
| June 3 | Friday | Classes end |
| June 6–9 | Monday–Thursday | Spring quarter examinations |
| June 11 | Saturday | 154th commencement |
| June 14 | Tuesday | Spring quarter grades due (faculty) |

## SUMMER SESSION 2005

### Summer Session I

| | | |
|---|---|---|
| April 11 | Monday | Summer advance registration period begins (ecampus) |
| April 18–May 27 | Monday–Friday | Mail-in registration for non-SCU students |
| May 31–June 10 | Tuesday–Friday | In-person registration |
| June 16 | Thursday | Classes begin |
| June 13–20 | Monday–Monday | Late registration/add period |
| June 20 | Monday | Last day to declare P/NP grading option |
| July 1 | Friday | Last day to withdraw from classes without a W grade |
| July 4 | Monday | Independence Day; academic and administrative holiday |
| July 15 | Friday | Last day to withdraw from classes |
| July 20 | Wednesday | Classes end |
| July 21–22 | Thursday–Friday | Summer Session I examinations |
| July 27 | Wednesday | Summer Session I grades due (faculty) |

### Summer Session II

| | | |
|---|---|---|
| April 11 | Monday | Summer advance registration period begins (ecampus) |
| April 18–May 27 | Monday–Friday | Mail-in registration for non-SCU students |
| May 31–June 10 | Tuesday–Friday | In-person registration |
| June 13–July 27 | Monday–Wednesday | Late registration/add period |
| July 25 | Monday | Classes begin |
| July 27 | Wednesday | Last day to declare P/NP grading option |
| August 8 | Monday | Last day to withdraw from classes without a W grade |
| August 19 | Friday | Last day to withdraw from classes |
| August 26 | Friday | Classes end |
| August 29–30 | Monday–Tuesday | Summer Session II examinations |
| September 5 | Monday | Labor day, administrative holiday |
| September 5 | Tuesday | Summer Session II grades due (faculty) |

*All dates are inclusive.*
*Registration dates are subject to change.*

# 1

# Santa Clara University

## UNIVERSITY MISSION

Santa Clara University is a Catholic and Jesuit institution that makes student learning its central focus, promotes faculty and staff learning in its various forms, and exhibits organizational learning as it deals with the challenges facing it.

Student learning takes place at the undergraduate and graduate level in an educational environment that integrates rigorous inquiry and scholarship, creative imagination, reflective engagement with society, and a commitment to fashioning a more humane and just world.

As an academic community, we expand the boundaries of knowledge and insight through teaching, research, artistic expression, and other forms of scholarship. It is primarily through discovering, communicating, and applying knowledge that we exercise our institutional responsibility as a voice of reason and conscience in society.

We offer challenging academic programs and demonstrate a commitment to the development of:

- Undergraduate students who seek an education with a strong humanistic orientation in a primarily residential setting.
- Graduate students, many of them working professionals in Silicon Valley, who seek advanced degree programs that prepare them to make significant contributions to their fields.

In addition to these core programs, we also provide a variety of continuing education and professional development opportunities for nonmatriculated students.

Santa Clara University
Approved by the Board of Trustees
February 20, 1998

## ACADEMIC INTEGRITY

The University is committed to a pursuit of truth and knowledge that requires both personal honesty and intellectual integrity as fundamental to teaching, learning, scholarship, and service. Therefore, all members of the University community are expected to be honest in their academic endeavors, whether they are working independently or collaboratively, especially by distinguishing clearly between their own original work and ideas, and those of others, whether published or not.

## THE UNIVERSITY

Santa Clara University is a comprehensive Jesuit, Catholic university located in the heart of Silicon Valley, with 8,060 students. California's oldest highest education institution offers a rigorous undergraduate curriculum in arts and sciences, business, and engineering, plus nationally recognized graduate and professional programs in business, education, engineering counseling psychology, law, and pastoral ministries.

For the 13th consecutive year, Santa Clara University ranked second for overall academic quality among all regional universities in the West by *U.S. News and World Report* for 2002. The University sustains its high national reputation by offering a strong core curriculum, integrated learning environment, and research opportunities for all undergraduate students.

SCU has the third highest graduation rate among all U.S master's universities. *U.S. News* in 2002 ranked the University's MBA program in the top 20 among the nation's 218 part-time programs and fourth best in California. The School of Law's intellectual property program was recognized among the top 10 in the country for the sixth year in a row.

Santa Clara University's diverse community of scholars, characterized by small classes and a values-oriented curriculum, is dedicated to educating students for competence, conscience, and compassion. The traditions of Jesuit education—educating the whole person for a life of service—run deep in all of its curricular and co-curricular programs.

SCU celebrated its 150th anniversary in 2001 and kicked off a $350 million fund-raising campaign in 2003.

## HISTORY

Santa Clara University, founded in 1851 by the Society of Jesus as "Santa Clara College," is California's oldest institution of higher learning. It was established on the site of the Mission Santa Clara de Asís, the eighth of the original 21 California missions.

The "college" originally operated as a preparatory school and did not offer courses of collegiate rank until 1853. Following the Civil War, enrollment increased, and by 1875 the size of the student body was 275. One-third of the students were enrolled in the collegiate division; the remainder attended the college's preparatory and high school departments.

Santa Clara experienced slow and steady growth during its first 60 years, becoming "The University of Santa Clara" in 1912, when the schools of engineering and law were added. In 1925, the high school was separated from the University; it took the name of Bellarmine College Preparatory in 1928.

The Leavey School of Business began in 1926 and within a decade it became one of the first business schools in the country to receive national accreditation.

For 110 years, Santa Clara was an all-male school. Then, in the fall of 1961, women were accepted as undergraduates and Santa Clara became the first coeducational Catholic university in California. The decision resulted in an admissions explosion—from 1,500 students to more than 5,000. The size of the faculty tripled, and the University began the largest building program in school history, building eight residence halls, a student union, and the athletic stadium.

In the early 1970s, the Board of Trustees voted to limit the size of the undergraduate population, an action that was intended to preserve the character and ensure the quality of the University for generations to come. In 1985, the University adopted "Santa Clara University" as its official name.

## FACULTY

Santa Clara University's emphasis on a community of scholars and integrated education attracts faculty who are as committed to their students' intellectual and moral development as they are to pursuing their own scholarship. Santa Clara University's 425 full-time faculty members include Fulbright professors, nationally recognized authors and poets, groundbreaking scientists, and distinguished economic theorists. Undergraduate classes are small, averaging 25 students, with an overall faculty/student ratio of 12:1.

## STUDENT BODY

Santa Clara University actively seeks diversity. In fall 2002, the University enrolled 4,643 undergraduate and 3,417 graduate students, with male/female ratios at 44/56 undergraduate and 53/47 graduate. In the same term, 45 percent of undergraduate students and 67 percent of graduate students identified themselves as people of color. Approximately 60 percent of Santa Clara University undergraduate students are from California; the others are from 43 states and 33 foreign countries. In 2002–2003, 71 percent of the undergraduate students received some kind of financial aid—scholarships, grants, or loans.

The University's commitment to learning is expressed in the fact that 93 percent of freshman students advance to the sophomore year and 80 percent graduate, among the highest percentages in the country.

## ACADEMIC PROGRAMS

Santa Clara University confers the undergraduate degrees of Bachelor of Arts (B.A.), Bachelor of Science (B.S.), and Bachelor of Science in Commerce (BSC). The University also offers graduate programs in law (J.D., LL.M.), business (MBA), engineering (M.S., Ph.D.), counseling psychology (M.A.), education (M.A.), and pastoral ministries (M.A.).

The College of Arts and Sciences offers majors in ancient studies, anthropology, art history, biology, chemistry, classical studies, combined sciences, communication, computer science, economics, engineering physics, English, environmental science, environmental studies, French and Francophone studies, Greek, history, individual studies, Italian studies, Latin, liberal studies, mathematics, music, philosophy, physics, political science, psychology, religious studies, sociology, Spanish studies, studio art, and theatre arts.

The Leavey School of Business offers majors in accounting, economics, finance, management, marketing, and operations and management information systems.

The School of Engineering offers majors in civil engineering, computer engineering, electrical engineering, engineering, and mechanical engineering.

The wide range of departmental, school, and interdisciplinary minors, emphases, and other programs of study available to students includes aerospace studies, Asian studies, biotechnology, Catholic studies, community studies, creative writing, ethnic studies, gerontology, information technology, medieval and Renaissance studies, military science, retail studies, University honors, urban education, women and gender studies, and programs in international business and international studies.

## CORE CURRICULUM

Santa Clara University's Core Curriculum aims to provide students with the knowledge, skills, and sensitivity they need to become responsible, wise, and creative leaders in society. The Core consists of three groups of courses, which are clustered around three themes: Laying Foundations, Reaching Out, and Integrating for Leadership. These thematic clusters are designed to promote self-discovery; to introduce methods of inquiry, interaction, and analysis; and to help students integrate their experiences and hone their perspectives. Classes in English, U.S. and world cultures, Western intellectual traditions, social science, mathematics, natural science, technology, religious studies, ethics, and a second language are among the Core's requirements.

## RESIDENTIAL LEARNING COMMUNITIES

In furtherance of Santa Clara University's goal of fostering integrated education within a community of scholars the University has established Residential Learning Communities. It is the purpose of RLCs to enhance the education of the whole person and to deepen the connection between learning and living as responsible members of community.

On entering SCU all freshmen simultaneously become members of one of nine theme-based RLCs, whether they live on campus or not. Non-resident students are given access to the residence hall in which their RLC is located so that they can

participate fully in the RLC's programs. In their residential learning communities, students take some courses in common, form study groups, interact with faculty and staff, and participate in theme-based cocurricular and extracurricular activities both on and off campus.

Most RLCs are chiefly two-year communities, but several offer the opportunity for students to remain in their RLC throughout their undergraduate careers.

## CENTERS OF DISTINCTION

Santa Clara University has four Centers of Distinction that serve as major points of interaction between the University and society. Each center focuses on a theme that is central to its distinctive mission as a Jesuit university offering "an educational environment that integrates rigorous inquiry and scholarship, creative imagination, reflective engagement with society, and a commitment to fashioning a more humane and just world." Each center engages faculty and students from different disciplines as well as experts and leaders from the community.

### Pedro Arrupe, S.J., Center for Community-Based Learning

The Arrupe Center, created as the Eastside Project in 1985 and renamed in 2001, educates students and the University as a whole in the realities of the lives of the marginalized and the poor. By providing students and faculty members opportunities for real-life, community-based learning experience both at home and abroad, the Arrupe Center for Community-Based Learning seeks to advance the Jesuit tradition of the service of faith and the promotion of justice, uniting and transforming both University and community in a common effort to respond compassionately and self-critically to those most in need.

### Bannan Center for Jesuit Education

The Bannan Center was established in 1996 to enhance the University's Catholic and Jesuit character through the exploration of the Ignatian vision, the educational and spiritual legacy of St. Ignatius of Loyola, the founder of the Society of Jesus. The center offers faculty, staff, students, alumni, and friends opportunities—through grants, retreats, lectures, workshops, conferences, visiting scholars, and its publication, *explore*—to understand and extend Santa Clara's Catholic and Jesuit tradition and mission into the ongoing life of the contemporary university.

### Center for Science, Technology, and Society

Established in 1997, the Center for Science, Technology, and Society seeks to illuminate the dynamic interplay of science and technology with culture and society. One of its goals is to help ensure that individuals, social and business institutions, and government use science and technology in ways that will improve the quality of our lives. With strong partnerships in Silicon Valley, the center conducts applied research, sponsors lectures and conferences, publishes a magazine, *STS Nexus*, and offers an interdisciplinary minor. This minor, in Information Technology and Society, is described in Section 7.

### Markkula Center for Applied Ethics

Santa Clara University established the Center for Applied Ethics in 1986, and renamed it the Markkula Center for Applied Ethics in 1995, to heighten awareness of ethical issues and to improve ethical decision making. It operates as a community of faculty, staff, students, and off-campus participants with the common goal of helping people develop strategies for understanding and resolving the ethical dilemmas that confront them and society. The Ethics Center supports interdisciplinary teaching, research, and community programs in applied ethics. Programs for students include forums and activities that provide a framework for value-based decision making in their personal and professional lives.

## CAMPUS

The University boasts proximity to one of the country's great cultural centers, San Francisco and the Bay Area, as well as to the Pacific beaches of Santa Cruz and the world-famous Monterey Peninsula. The 104-acre campus is located on El Camino Real in Santa Clara, California, near the southern end of San Francisco Bay.

At the campus center is the Mission Church, restored in 1928 and surrounded by the roses and palm and olive trees of the historic Mission Gardens. The adjacent Adobe Lodge is the oldest building on campus. Restored in 1981 to its 1822 decor, the lodge contains a presidential dining room as well as central and private dining facilities for faculty and staff.

The 54 buildings on campus include 12 residence halls, two libraries, a student center, the Ricard Observatory, the de Saisset Museum, Mayer Theatre, and extensive athletic facilities. In 2000, the University completed a $68 million construction program, including new science laboratories, a performing arts center, arts and sciences classrooms and offices, a recreation and fitness center, a residential learning complex for juniors and seniors, a new facilities/support services building, and a parking structure.

Computer and telecommunications technology is an integral part of the life and learning at Santa Clara University. All residence hall rooms and most classrooms are connected to high-speed Internet access and campus e-mail.

## ATHLETICS AND RECREATION

The University maintains a well-balanced program of intercollegiate and recreational sports and is a Division I member of the National Collegiate Athletic Association (NCAA) and the West Coast Conference (WCC).

Santa Clara fields one of the top athletic programs for a school of its size and scope. Its teams regularly appear in NCAA post-season playoffs. Bronco scholar-athletes distinguish themselves in 17 intercollegiate sports. Intercollegiate competition for men is conducted in basketball, baseball, tennis, water polo, golf, soccer, crew, and cross-country. Intercollegiate competition for women is conducted in volleyball, basketball, softball, tennis, cross-country, water polo, soccer, crew, and golf.

The University also offers a range of club sports (men's boxing, men's volleyball, men's and women's lacrosse, and men's and women's rugby) and an extensive program of recreation and intramurals (basketball, soccer, volleyball, flag football, badminton, tennis, and softball). Lifetime classes include instruction in aerobics, kickboxing, swimming, weight and fitness training, and yoga.

Informal recreation offers unstructured use of facilities for weight training, cardiovascular conditioning, lap swimming, and gym sports. The Pat Malley Fitness and Recreation Center offers a 9,500-square-foot weight training and cardiovascular exercise room and houses all recreation, intramurals, lifetime fitness, and club sport programs. The renovated Leavey Center features a new roof surrounded by spectacular 23-foot glass walls, a new floor, new bleachers, and a new suspended scoreboard.

The Santa Clara University Tennis Center features nine lighted championship courts with seating for 750 spectators. Rounding out the other athletic facilities are 12 acres of intramural athletic fields, and the baseball and soccer complex of Buck Shaw Stadium.

## ALUMNI

Santa Clara University's 64,912 alumni live in all 50 states. More than half live in the Bay Area, where many of them are leaders in business, law, engineering, academia, and public service. With their leadership, the University endowment reached nearly $407 million in 2002.

# 2

# Santa Clara Core Curriculum

A university expresses its most basic values in its core curriculum, that part of an undergraduate education required of all students. The Santa Clara Core Curriculum, adopted in fall 1996 after four years of University-wide discussion, combines traditional core strengths with a new emphasis on curricular integration, world cultures, and technology. It stems from the University Mission, which states, "Santa Clara University is a Catholic and Jesuit institution that makes student learning its central focus."

Within this framework, the Santa Clara Strategic Vision declares the University's intention "to excel in educating men and women of competence, conscience, and compassion." In pursuit of this aim, the University emphasizes the Catholic and Jesuit traditions of spirituality, intellectual excellence, study of Western and world cultures, internationalism, the promotion of faith and justice, and leadership as service to others. The University Core Curriculum seeks to further these values by fostering the strengths of a liberal education, including religious studies and ethics.

Accordingly, the Core seeks to create a University learning environment which enables students to achieve intellectual excellence, live as responsible citizens, and seek to be of constant service in creating a more just and humane society. The Core encompasses three thematic course clusters: Laying Foundations, Reaching Out, and Integrating for Leadership.

## LAYING FOUNDATIONS

The first cluster of core courses prepares the foundations for the competence and excellence which the University hopes will mark all of its graduates. The traditional building blocks of liberal education—language, culture, and mathematics—challenge students to reflect upon the diverse communities they have experienced in their own lives and to begin to sharpen the analytical tools they will need in whatever paths they choose.

## REACHING OUT

The second cluster of core courses expands students' perspectives in two ways. First, students are immersed in the methods of inquiry which a citizen of the 21st century requires to participate in a civic dialogue that is increasingly global in scope. This participation will entail an ability to understand an expanding range of complex topics, including political, religious, scientific, ethical, and social concerns. Second, students are challenged to begin to understand the diverse cultures and societies with whom they share this fragile planet. The expansion of horizons in these ways is intended to encourage the continuing development of intellectually grounded moral compassion in the Santa Clara graduate.

## INTEGRATING FOR LEADERSHIP

The third cluster of core courses are transition courses which straddle both the core and the focused areas of study that comprise students' majors, minors, and other academic and cocurricular programs. They seek to complement these other areas of study by encouraging disciplined reflection on the moral stance those who have earned Santa Clara degrees will adopt in their lives as a result of their engagement with this university's learning environment. Graduates will leave the university as life-long learners, with consciences that are at once both critically formed and always in the process of being critically re-formed.

## THE SANTA CLARA CORE: THEMATIC CLUSTERS AND REQUIREMENTS

The Santa Clara Core Curriculum expresses the University's strongest values in an integrated whole. It is hoped students will not just experience Core requirements as individual courses but as related educational experiences that help structure the students' whole University study. The Santa Clara Core Curriculum is a series of three thematic clusters. The progression of those themes is not strictly chronological, nor will all students study Core courses in exactly the same sequence. They will, however, study the same types of subjects based upon the same sets of criteria for inclusion in the Core. The Santa Clara Core Curriculum expresses the psychological dynamics of building on the foundation of one's developing identity (Who am I?), then of moving out to encounter new realities (What is the world like?), and then returning to oneself to integrate these new realities into one's world view as a basis for leading others (What is my relationship to the world? How should I act?). All of these stages, of course, take place every day for all learners. Thus, while each cluster has a primary theme, all three themes ought ultimately to find expression in each cluster. Senior Capstones, departmental majors and minors, and University interdepartmental programs are other important ways of assisting students to integrate their complete University experience.

### First Thematic Cluster: Laying Foundations

English Composition (2)
Mathematics
United States
Religious Studies (first course)
Second Language
Western Culture (2)

### Second Thematic Cluster: Reaching Out

Social Science
Technology
World Cultures/Societies
Natural Science
Religious Studies (second course)

### Third Thematic Cluster: Integrating for Leadership

Ethics
Third Writing Course
Religious Studies (third course)

# 3

# College of Arts and Sciences

*Dean:* W. Atom Yee (Acting)
*Associate Deans:* Amy M. Shachter
*Assistant Dean:* Kathleen Villarruel Schneider
*Assistants to the Dean:* Marie Brancati, Judy E. Gillette
*Project Coordinator:* Henrietta Matteucci
*Office of the Dean:* Ramos Center (408-554-4455)

The goal of the College of Arts and Sciences is to create a learning community characterized by a commitment to address the fundamental problems of society and a spirit of inquiry, mutual respect, and intellectual excitement. In this way, the College is the center of Santa Clara's Jesuit, liberal education. With more than 1,500 courses in the humanities, arts, social sciences, and natural sciences, the College provides:

- A common educational experience for all undergraduate students at Santa Clara through the University's Core Curriculum;
- Majors in 36 subject areas;
- Departmental and interdisciplinary minor programs; and
- Opportunities for further study in a student's particular area of interest.

All undergraduate students at the University explore the liberal arts and sciences through the University's Core Curriculum, and they can expect the College's courses to challenge them in many ways: to develop open and critical thinking; to communicate effectively; to work with complex methods of inquiry; to understand diverse cultures and peoples; and to appreciate the demands of principled ethical decision making. Those who select majors or minors in the College have the opportunity to develop specialized knowledge and skills in areas of concentration that reflect their personal interests and talents.

The College confers the degree of Bachelor of Arts in Ancient Studies, Art History, Chemistry, Classical Studies, Communication, English, French and Francophone Studies, German Studies, Greek, History, Individual Studies, Italian Studies, Latin, Latin and Greek, Music, Philosophy, Religious Studies, Spanish Studies, Studio Art, and Theatre Arts. It confers the degree of Bachelor of Science in Anthropology, Biology, Chemistry, Combined Sciences, Computer Science, Economics, Engineering Physics, Environmental Science, Environmental Studies, Individual Studies, Liberal Studies, Mathematics, Physics, Political Science, Psychology, and Sociology.

Students are encouraged to use elective courses to pursue particular interests beyond their chosen major. In addition to selecting individual courses, students have the opportunity to organize their electives around minors and emphases in many departmental and interdisciplinary programs throughout the College.

## BACHELOR OF ARTS

The program of study for the degree of Bachelor of Arts, which consists of a total of 175 quarter units, includes courses that fulfill the goals of the University Core Curriculum, the College of Arts and Sciences curriculum, and the student's major curriculum.

For the Bachelor of Arts degree, students must fulfill the following requirements. The courses approved as fulfilling these requirements for the academic year are listed in the corresponding *University Core Curriculum* booklet and the *Undergraduate Schedule of Classes.*

*Note: Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.*

### English Composition

Two courses, normally ENGL 1 and 2, or equivalent.

### Third Writing

One course emphasizing writing from the list of approved courses, preferably taken after completing 60 quarter units.

### Western Culture

Three courses in one of the following sequences: (a) ENGL 11, 12, and 13; (b) HIST 11, 12, and 13; (c) HNRS 11, 12, and 13 (open only to students admitted to the University Honors Program); (d) PHIL 11, 12, and 13; (e) ARTH 11, 12, and 13; or (f) PERF 11, 12, and 13. The three courses in Western Culture should normally be taken in chronological order.

### Second Language

Successful completion of the third course of the first-year, college-level sequence in a classical or modern foreign language or demonstration of an equivalent level of proficiency by passing a language proficiency examination supervised by the departments of Classics or Modern Languages and Literatures. Students who have obtained a minimum score of 4 on the Advanced Placement Examination in a classical or modern foreign language have satisfied the second language requirement. Non-native speakers of English may satisfy this requirement by petitioning the chair of the Department of Modern Languages and Literatures and the chair of the University Core Curriculum Committee. The petition must include professionally recognized documentation of proficiency in a language other than English.

*Note: High school language study is not sufficient to satisfy this requirement.*

### Social Sciences

One course from the list of approved courses.

### Mathematics and Natural Sciences

Three courses: (a) one course in mathematics; (b) one laboratory course in natural science; and (c) one additional course in either mathematics or natural science. (MATH 3, 9, 10, 44, 45, or 61 cannot be used to satisfy this requirement.)

### Ethics

One course in ethics from the list of approved courses.

### Religious Studies

Three courses in religious studies or from the list of other approved courses, one each at the introductory, intermediate, and advanced levels, taken in sequence. The introductory-level course is normally taken during the freshman year; the advanced-level course must be taken after completing 88 quarter units.

### United States

One course from the list of approved courses.

### World Cultures/Societies

Two courses from the list of approved courses. At least one must be an area studies/regional course.

### Technology

One course from the list of approved courses.

### Fine Arts

A minimum of 4 quarter units from the list of approved courses.

### Ethnic Studies/Women's and Gender Studies

One ethnic studies or women's and gender studies course from the list of approved courses.

### Major Requirements and Electives

Each student must select one from among the Bachelor of Arts majors offered by the College. The requirements for each major are provided in the pages that follow. Depending on the requirements for a particular major, students will have a number of free elective courses they may use to pursue interests in particular areas.

## BACHELOR OF SCIENCE

The program of study for the degree of Bachelor of Science, which consists of a total of 175 quarter units (197 quarter units for Engineering Physics), includes courses that fulfill the goals of the University Core Curriculum, the College of Arts and Sciences curriculum, and the student's major curriculum.

For the Bachelor of Science degree, students must fulfill the following requirements. The courses approved as fulfilling these requirements for the academic year are listed in the corresponding *University Core Curriculum* booklet and the *Undergraduate Schedule of Classes.*

*Note: Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.*

### English Composition

Two courses, normally ENGL 1 and 2, or equivalent.

### Third Writing

One course emphasizing writing from the list of approved courses.

### Western Culture

Two courses in one of the following sequences: (a) ENGL 11, 12, and 13; (b) HIST 11, 12, and 13; (c) HNRS 11, 12, and 13 (open only to students admitted to the University Honors Program); (d) PHIL 11, 12, and 13; (e) ARTH 11, 12, and 13; or (f) PERF 11, 12, and 13. The two courses in Western Culture should normally be taken in chronological order.

### Second Language

***Majors in Social Sciences*** Successful completion of the third course of the first-year, college-level sequence in a classical or modern foreign language or demonstration of an equivalent level of proficiency by passing a language proficiency examination supervised by the departments of Classics or Modern Languages and Literatures.

***Majors in Mathematics and Natural Sciences*** Successful completion of the second course of the first-year, college-level sequence in a classical or modern foreign language or demonstration of an equivalent level of proficiency by passing a language proficiency examination supervised by the departments of Classics or Modern Languages and Literatures.

Students who have obtained a minimum score of 4 on the Advanced Placement Examination in a classical or modern foreign language have satisfied the second language requirement. Non-native speakers of English may satisfy this requirement by petitioning the chair of the Department of Modern Languages and Literatures and the chair of the University Core Curriculum Committee. The petition must include professionally recognized documentation of proficiency in a language other than English.

*Note: High school language study is not sufficient to satisfy this requirement.*

### Social Sciences

One course from the list of approved courses.

### Mathematics and Natural Sciences

Four courses: (a) a minimum of two courses in mathematics and (b) a minimum of two courses in natural sciences, including at least one laboratory science course. (MATH 3, 9, 10, 44, 45, or 61 cannot be used to satisfy this requirement.)

### Ethics

One course in ethics from the list of approved courses.

### Religious Studies

Three courses in religious studies or from the list of other approved courses, one each at the introductory, intermediate, and advanced levels, taken in sequence. The introductory-level course is normally taken during the freshman year; the advanced-level course must be taken after completing 88 quarter units.

### United States

One course from the list of approved courses.

### World Cultures/Societies

Two courses from the list of approved courses. At least one must be an area studies/regional course.

### Technology

One course from the list of approved courses.

### Fine Arts

A minimum of 4 quarter units from the list of approved courses.

### Ethnic Studies/Women and Gender Studies

One ethnic studies or women and gender studies course from the list of approved courses.

### Major Requirements and Electives

Each student must select one from among the Bachelor of Science majors offered by the College. The requirements for each major are provided in the pages that follow. Depending on the requirements for a particular major, students will have a number of free elective courses they may use to pursue interests in particular areas.

## DEPARTMENT OF ANTHROPOLOGY AND SOCIOLOGY

*Professor Emeritus:* Witold Krassowski
*Professors:* Alma M. Garcia, Charles H. Powers, George D. Westermark *(Co-Chair, Anthropology)*
*Associate Professors:* Luis Calero, S.J., Marilyn Fernandez *(Co-Chair, Sociology)*, Mary Elaine Hegland, Russell K. Skowronek
*Assistant Professors:* Shawn A. Ginwright, Margaret A. Graham, Lisa Kealhofer, Laura Nichols, John M. Ratliff

The Anthropology and Sociology Department offers two distinct degree programs leading to the Bachelor of Science in Anthropology or the Bachelor of Science in Sociology. A solid undergraduate foundation in anthropology or sociology secures the analytical skills needed to undertake professional degree programs (in anthropology, sociology, business, law, and social services) or to embark on a number of careers (from management to research).

A minor in anthropology or sociology is available. Special emphasis programs and honors thesis options are available to qualified majors.

### REQUIREMENTS FOR THE ANTHROPOLOGY MAJOR AND MINOR

Anthropology majors must fulfill the general requirements of the University for the Bachelor of Science degree. In addition, they must complete the following requirements:

1. ANTH 1, 2, 3
2. SOCI 1, ANTH 50
3. ANTH 116, 118, 124
4. Six additional upper-division courses in anthropology, including at least one selected from any three of the following four groups: Biological (ANTH 130–139), Archaeological (ANTH 140–149), Cultural (ANTH 150–179), and Regional (ANTH 180–189). ANTH 198 (Internship) is strongly recommended.
5. An introductory statistics course (See advisor for recommendation.)

The minor in anthropology requires completion of ANTH 1 or 2; 3; one additional lower-division course; ANTH 118 and two other upper-division courses.

### REQUIREMENTS FOR THE SOCIOLOGY MAJOR AND MINOR

Sociology majors must fulfill the general requirements of the University for the Bachelor of Science degree. In addition, they must complete the following:

1. SOCI 1, 33, 50
2. ANTH 3
3. SOCI 118, 119, 120, 121
4. Five other upper-division courses in sociology. SOCI 198 is strongly recommended.

The minor in sociology requires completion of SOCI 1, 33, 117, and three other upper-division sociology courses.

An average grade of C must be maintained in courses in the major.

## SPECIAL EMPHASIS PROGRAMS

Anthropology and sociology majors have the option of completing a special emphasis program to complement their majors. These programs are not narrow specializations but reflect competence in the applied fields of the disciplines. The completion of special emphasis programs will be noted on student transcripts with the approval of the section head. Detailed descriptions of the special emphasis programs can be obtained from the department administrative assistant.

### Anthropology Special Emphases

***Archaeology*** focuses on a deeper understanding of the human past and how it is studied. This is a possible course of study for majors with an interest in employment in cultural resource management or graduate study in archaeology.

***Applied Anthropology*** prepares students to use anthropological knowledge to address pressing human problems in careers outside the university. Through course work and related internships, students will gain a better understanding of how anthropological knowledge and skills can be used practically in occupations related to health and medicine, international development, environment, government, business and education, immigration, and poverty.

***Law and Society*** combines anthropology with the study of legal institutions and conflict resolution. This is a possible course of study for majors planning careers in law or law enforcement.

### Sociology Special Emphasis

***Applied Sociology: Business and Human Services*** explores the application of sociological insights and talents to the special challenges facing both corporations and public agencies in a changing world. Practice components bring students into contact with real people dealing with real issues in innovation-generating and care-providing organizations.

## ANTHROPOLOGY PROGRAM

***1. Introduction to Physical Anthropology***

Examines the place of the human species in nature—our origin, our relationships to other species, and the biological variation that currently exists within our species. Explores evolutionary theory, genetics, human variation and "race," human adaptability and health, primatology, and evidence from the fossil record. (4 units)

***2. Introduction to Archaeology***

Survey of the evolution of human culture during the prehistoric period in the Old World and the New World. Examination of the methods archaeologists use to study the past. (4 units)

### *3. Introduction to Social and Cultural Anthropology*

Concept of culture, the development and evolution of social and cultural analyses of the major subsystems of culture (economic, ethnological, social and political organizations, philosophy, and world-view), and selected issues of social concern; racism, cultural determinism, cultural relativity. (4 units)

### *4. Vanished People and Lost Civilizations*

Examination of "popular anthropology." Humans and their culture, human origins, and the development and understanding of human behavior. Evaluation of theories and assumptions in the popular literature in light of current anthropological knowledge. (4 units)

### *50. World Geography*

Introduction to the geographical perspective—a spatial viewpoint—in the study of the locations and distributions of physical and human phenomena on the earth's surface. Major global social, political, and economic problems discussed. (4 units)

### *56. Anthropology of Religion*

Relation of religion to culture, personality, and social organization. Theories on the functioning of myth, ritual, and symbolism. Religious leaders, interpretations of death and afterlife, traditional curing, and religious movements and cults. (4 units)

### *86. Native American Cultures*

Study of the range of variation in Native American cultures. Examination of changes in recent history as well as contemporary issues. (4 units)

### *88. Women and Gender in the Middle East*

Examination through monographs, novels, guest speakers, and films of the situations and activities of Middle Eastern women in a variety of geographical and class settings. Women in economic and political process, family and kinship, war, and revolution. Women and gender symbolism as related to politics, development, social change, and religious resurgence. (4 units)

### *90. Cross-Cultural Study of Women and Gender*

Cross-cultural examination of the roles, statuses, and gender constructions of females and males through monographs, films, and guest speakers. Exploration of factors affecting the lives of women and men, such as domestic and public realms of activities, political and economic factors, social change, religion, family, and socialization. (4 units)

### *91. Lower-Division Seminar in Anthropology*

Seminar for freshmen and sophomores on selected issues in anthropology. By permission of the instructor only. (4 units)

### *116. Anthropological Methods*

Logic of research procedures and theoretical issues associated with anthropological practice. Skills and methods of designing and analyzing research explored in readings and exercises. Required for majors in anthropology. *Prerequisites: ANTH 1, 2, 3, and 50, and SOCI 1 with grades of C– or better, or special permission of the department chair.* (5 units)

### *118. Anthropological Theory*

In-depth treatment of innovations and developments in anthropological thought. Emphasis on explaining what is essential about particular theoretical frameworks and their integration across anthropological subdisciplines. Required for majors and minors. (5 units)

### *124. Senior Project*

Senior majors complete their projects under the guidance of faculty advisors and make seminar presentations of their work. *Prerequisite: ANTH 116 with a grade of C– or better, or special permission of the department chair.* (5 units)

### *132. Human Evolution*

This course aims to help students achieve an understanding of the nature and conduct of natural science, and to explore the evidence for human evolution. The course is organized into three parts: (1) the genetic basis for evolution (microevolution); (2) the processes in the evolution of species (macroevolution); and (3) the human fossil record. The bulk of the course will be devoted to the study, understanding, and interpretation of the human fossil evidence. The course will also consider the role of culture within the broader context of human evolution. (5 units)

### *133. Human Nutrition and Culture*

Study of the interactions of biology and culture in shaping the dietary patterns and nutritional status of human beings. Discussion of the evolution of the human diet and nutritional requirements; the basic principles of human nutrition and nutritional assessment; and the social, economic, and political factors that influence the nutritional health of human societies today. Includes dietary assessment and interpretation exercises. (5 units)

### *134. Health, Disease, and Culture*

Emphasizes the study of health and disease in ecological perspective; the influence of culture on the ways people explain and treat illness, stress, and healing; and the complexities of health care delivery in pluralistic societies. (5 units)

### *135. Human Development and Sexuality*

Examination of evolutionary, biological, and sociocultural aspects of human growth, development, and sexuality throughout the life cycle. Special emphasis on prenatal development, pregnancy and birth, infancy and young childhood, adolescence, and old age in a range of societies. (5 units)

### *136. Forensics*

Using physical remains to learn what we can about the age, gender, and other characteristics of deceased people, including their nutrition, exposure to diseases, experience with serious accidents, and causes of death. (5 units)

### *140. Food, Culture, and the Environment*

Food is central to our health and to our social experience. This course will explore the history and impact that food choices have made on human societies. Several foods that have become staples in the world today, like sugar, pepper, and various grains, have significantly affected the environment, patterns of land use, economy (both local and global), cuisine, and the meaning of meals and food sharing. Specific foods will be used to delve into these repercussions, both intended and unintended, of production. (5 units)

### *142. Environmental Archaeology*

This course looks at how archaeologists use the environment to understand past human societies. In addition to archaeological methods, we will make use of geological, historical, and geographical techniques to study ancient environments. Discussion topics include issues of human evolution, complexity, symbolism, social interaction, and technology. The class will discuss the data and arguments offered for the role of environments in creating and shaping cultures: how do environments and people shape each other? (5 units)

### *146. Perspectives on the Spanish and Native American Experience*

Examines the Spanish penetration and conquest of the New World. Considers changes that influenced both the Native Americans and European immigrant populations to form new ethnic groupings. Ethnohistorical, documentary, and archaeological records applied to explore relevant topics. (5 units)

### *147. Archaeology: From Domestication to Urbanization*

The world and people have changed radically in the last 10,000 years with the domestication of plants and animals and the development of cities and states. We will examine the archaeological evidence in different regions of the world (after 12,000 B.C.) to understand how and why these transformations occurred. (5 units)

### *148. Historical Archaeology*

Introduction to the discipline of historical archaeology. Traces its emergence and development including controversies regarding its relationships with the larger fields of history and anthropology. Introduction to the variety of data sources used by historical archaeologists to aid in interpretation of the historical past. *Prerequisite: ANTH 2 or consent of instructor.* (5 units)

### *150. Religion in Culture and Society*

Cross-cultural examination of religions in a range of human societies. Emphasis on religious pluralism, religious movements, and secularism in the contemporary world. (5 units)

### *151. Law and Society*

Current issues in the study of law and society. Exploration of legal systems at various levels of societal complexity to understand the basis for social control in all human societies. Courts, legal professions, and politics from a cross-cultural perspective. (5 units)

### *152. Political Anthropology*

Cross-cultural examination of political behavior in a range of human societies and the effects of social, cultural, and environmental factors on political organization. Religion and politics, the role of women in politics, ethnic competition, secret societies, political ritual and ceremony, and the effects of colonialism and economic change. Special emphasis on the relationship between local communities and national governments. (5 units)

### *153. Peasant Societies*

Examination of the nature of peasant societies and the changes they are facing in Africa, Asia, and Latin America. Topics include land scarcity, poverty, urban migration, and political turmoil. (5 units)

### *154. Ecological Anthropology*

Survey of the theories, methods, and applications of the ecological perspective to the cultural attributes of past and present human populations. Emphasis on the relationship between the natural environment and human cultural systems. (5 units)

### *155. Conflict Resolution*

Examines sources and responses to conflict in varied social and cultural contexts. Emphasis on application of negotiation, mediation, and arbitration in different fields. (5 units)

### *156. Anthropology of Muslim Peoples and Practices*

Examination of the variety of religious experiences, activities, and interpretations and the place of Islam in current social and political life such as community organization, local-level politics, governments and political resistance, women's roles and gender, and contact with the West. Discussion about underlying reasons for the resurgence of Islam and effects for Muslim peoples and societies. (5 units)

### *157. Family and Kinship*

Ways in which kinship and family life can be organized. Causes and consequences of different family patterns. How families differ across cultures, over time, and among different groups in the United States. (5 units)

### *158. Applied Anthropology*

Application of anthropological knowledge to contemporary human problems. Topics range from the introduction of new crops in agricultural development to miscommunication in international business. Concerns of education, health, and volunteer services. Implications of ethical problems and theories of social change. (5 units)

### *172. Anthropology of Aging*

Examination of aging and the elderly in a range of human societies. Emphasis on social change, gender, and social and geographic mobility as well as social, political, and cultural differences in understanding how the elderly adapt to, and cope with, the modern world. (5 units)

### *180. Study of Selected Cultures*

Examination of the social life, culture, and institutions of geographic areas and culture zones not otherwise covered in ANTH 181-188 regional studies course series. (5 units)

### *181. Pacific Island Societies*

Examination of the societies of the three culture areas of the Pacific: Melanesia, Micronesia, and Polynesia. Comparison of archaeological evidence, traditional ecological adaptations, social organization, and belief systems. Colonialism, economic change, migration, and political independence. (5 units)

### *185. Peoples of Latin America*

Examines the diversity of Latin America, a continent of great physical, archaeological, cultural, and socioeconomic contrasts; the mix of races and cultural traditions; human adaptation to the natural environment; economic and social inequalities; and the common heritage of Latin American peoples. (5 units)

### *186. Mesoamerican Prehistory*

A survey of the prehistoric cultures of Mesoamerica from earliest human occupation to European colonization. Examines the origins of agriculture, village life, and the rise and fall of state-level societies through the work of archaeologists and epigraphists. Consideration given to the ecological adaptations, social organization, and belief systems of the Aztecs, Toltecs, Maya, and the inhabitants of Teotihuacan. (5 units)

### *187. Native American Cultures of the Pacific Coast*

Examination of the diversity of Native American cultures found along the West Coast of North America from California to Alaska. Use of archaeological, ethnographic, and historic information to compare/contrast economies, social organization, and belief systems in the past and present. (5 units)

### *188. People, Culture, and Change in the Middle East*

Examination of people's lives, social organization, and change in the Middle East through archaeological evidence, ethnographies, film, and novels. Emphasis on political culture, the fate of tribal peoples and peasants under modernizing nations, women in society and gender symbolism, contact with the West, Islam and religious resurgence, and revolution. (5 units)

### *189. North American Prehistory*

Survey of the prehistoric cultures of North America and Northern Mexico from earliest human occupation to European colonization. *Prerequisite: ANTH 2 or consent of instructor.* (5 units)

### *193. Advanced Seminar in Anthropology*

Seminars for juniors and seniors on selected topics in anthropology. By permission of the instructor only. (5 units)

### *196. Archaeological Method and Theory*

Introduction to the techniques of discovery and analysis that archaeologists have found useful in research. Special attention to sampling techniques in survey and excavation. Classification techniques for measuring parameters of prehistoric demography, diet, craft specialization, and exchange. (5 units)

### *197A, 197B.Field Course in Archaeological Method*

Six weeks of on-site archaeological field research. Practical experience in the basic techniques of excavation and field analyses. By permission of the instructor only. (5 units)

### *198. Internship*

Opportunity for students in good standing to work and conduct anthropological analyses in community agencies, government bureaus, and political or industrial organizations. Must receive departmental approval prior to registration. This course may be repeated for credit with approval of the chair. (5 units)

### *199. Directed Reading/ Directed Research*

Intensive reading in areas not emphasized by the department. Independent research on specific topics not fully covered in departmental courses. Written departmental approval necessary prior to registration. This course may be repeated for credit with approval of the chair. (5 units)

## SOCIOLOGY PROGRAM

### *1. Principles of Sociology*

Introduction to the field of sociology. Emphasis on the major sociological perspectives and the basic elements of sociological analysis. Introductory exposure to research methodology. (4 units)

### *33. Social Problems in the United States*

Overview of contemporary social problems in the United States from a sociological perspective. Topics may include immigration, the economy, poverty, homelessness, social inequality. (4 units)

### *49. Computers, the Internet, and Society*

Explores the ways that technological and social change interact and affect each other through examination of the development and ramifications of the personal computer and the Internet. In particular, develops a sociological analysis of cyberspace and virtual reality as new social spaces with emerging institutions, practices, and implications for personal identity. (4 units)

### *50. World Geography*

Introduction to the geographical perspective—a spatial viewpoint—in the study of the locations and distributions of physical and human phenomena on the earth's surface. Major global social, political, and economic problems discussed. (4 units)

### *65. Crime and Delinquency*

Broad survey of major issues surrounding the causes and nature of, and solutions to, the problem of crime and delinquency in the United States. (4 units)

### *91. Lower-Division Seminar in Sociology*

Seminar for freshmen and sophomores on selected issues in sociology. By permission of the instructor and sociology co-chair only. (4 units)

### *117. Sociology's Analytical Frameworks and Conceptual Approaches*

Considers sociology as an integrated and coherent discipline by reviewing the development of different analytical frameworks which, when considered together, convey much of the conceptual power and rich history of the discipline. This class is required of all sociology minors. This course will not fulfill the SOCI 119 requirement for the major.

### *118. Qualitative Methods*

Provides students with an understanding of qualitative methods for social research by focusing on (1) classical and contemporary sociological works employing qualitative methods; and (2) a selection of qualitative methods and techniques in sociology. Students gain hands-on experience by producing a series of qualitative research projects. *Prerequisite: A grade of C- or better in SOCI 1 or special permission of the sociology co-chair.* (5 units)

### *119. Sociological Theory*

Provides an overview of sociological theory stressing the role of theory in the scientific method. This course is required of all majors and will not fulfill the SOCI 117 requirement for the minor. *Prerequisites: SOCI 1 with a grade of C– or better, or special permission of the sociology co-chair.* (5 units)

### *120. Quantitative Methods and Applied Statistics*

Application of quantitative research designs and statistics to empirically examine sociologically relevant research questions. Statistical analyses conducted using a statistical package such as SPSS or Microcase. *Prerequisites: SOCI 118 and simultaneous enrollment in SOCI 119.* (5 units)

### *121. Research Practicum*

Collaborative research project conducted under the direction of a faculty member. *Prerequisites: SOCI 119 and 120.* (5 units)

### *125. Honors Thesis*

This course can only be taken with special permission of the sociology co-chair. It ordinarily requires an overall GPA of 3.3, a GPA of 3.5 in the major, completion of SOCI 121, and approval of a thesis proposal defining a topic, outlining a theoretically driven research design, and having a timetable for conducting various stages of the research. (5 units)

### *127. Group Dynamics*

Explores the structure and social processes that occur in small and large groups. Concepts such as power and prestige, leadership, communication networks, collaboration and conflict, game theory, and distributive justice are examined. (5 units)

### *132. Social Stratification*

Analysis of the principal lines of social cleavage within U.S. society. Emphasis on the racial, sexual, ethnic, occupational, and class divisions prevalent in the contemporary world. (5 units)

### *133. Politics and Society in Developing Societies*

Social and political change in the Third World. Relationship between economic and social development and the emergence of democratic, authoritarian, or revolutionary regimes in Africa, Asia, and Latin America. Emphasis on ways in which the international system influences development through investigation of theories of interdependence, dependency, and neoimperialism. (5 units)

### *134. Globalization and Inequality*

Overview of globalization as a long-term historical process. Focus on the impact in the developing world, on people moving from the developing to the developed world, displacement of some and new opportunities for others during different bouts of globalization; long-term implications of privilege and marginality that globalization has produced. Examination of case material based on Latin American, African, and Asian historical experiences; exploration of theoretical models of high rates of poverty in the developing world and practical steps to reduce marginalization on a global scale. (5 units)

### *135. Gender and Social Change in Latin America*

Examination of the relationship between gender and the process of national and international factors related to social change in Latin America. Emphasis on selected case studies such as Mexico, Guatemala, Bolivia, El Salvador. (5 units)

### *136. Deviant Behavior*

Examination of deviant behavior such as crime, mental disorder, and alcoholism. Social factors in the etiology and control of deviant behavior. (5 units)

### *137. Social Change*

Significant trends and issues in contemporary U.S. society and in the world. Utility of sociological concepts, principles, and theories for understanding social change. (5 units)

### *138. Demography: Population and Resources*

Global, regional, and national population changes and the effects on people, groups, societies, and their environment. Topics include the dynamics of population change across different regions of the world (the developed versus the developing regions of Asia, Africa, and Latin America), communities, and families. (5 units)

### *140. Urban Society and Social Conflict*

Critical inquiry into urban sociology and theoretical and practical exposure to urban issues. Explores unresolved paradox in how we understand urban life; role of structural and cultural conditions in creating or adding to urban problems; issues such as poverty, immigration, housing, and the political economy of urban America. (5 units)

### *148. Diversity Issues in Contemporary American Organizations*

Changing form and function of complex organizations in the United States, with particular attention to contemporary racial/ethnic diversity issues. Focus on different ways of running an organization, the need for organizations to be "diversity friendly" to respond to opportunities and challenges during times of rapid change, "culture audit" techniques to gauge realities of life in organizations, particularly as they relate to racial/ethnic inclusiveness. (5 units)

### *149. Business, Technology, and Society*

Examination of the ways that technological and social change occur within the context of business organizations and strategies. In particular, provides a sociological analysis of how the emergence of the Internet and other new information and communication technologies provide both challenges and opportunities for effective business strategies in the 21st century. (5 units)

### *150. Ethnic Enterprises*

Examination of economic, historical, cultural, and political factors related to the origins and development of ethnic enterprises in the United States. (5 units)

### *152. Women and Men in the Workplace*

Examination of the status and roles of men and women in the labor force. How gender differences are developed through socialization and some of the consequences of these differences: tokenism, sexual harassment, the "glass ceiling," and the dual-career family. Includes strategies and policy remedies for gender inequality in the workplace. (5 units)

### *153. Race, Class, and Gender in the United States*

Examination of the concepts of race, ethnicity, class, and gender to analyze social identities, social relationships, and social institutions. Focus on the major issues and research questions in the specialized sociological field of race, ethnicity, class, and gender research. (5 units)

### *157. Sociology of Family*

Examines how family forms have changed over time in the United States including the causes and consequences of different family structures and role expectations. Patterns and dynamics of dating, family formation, child rearing, divorce, and extended family support systems are also covered. (5 units)

### *160. Law in a Changing Society*

Explores the law in relationship to the changing character of contemporary society. Legal issues raised by technological change (e.g. intellectual property rights, privacy) and general social change (e.g. shifting patterns of family, ethnicity, immigration) receive special attention. Focus on American legal institutions, with attention to other countries for comparative purposes and to highlight legal trends resulting from globalization. (5 units)

### *162. Political Sociology*

Analysis of power relations in the United States. Examination of different dimensions of power. Particular emphasis on the development of social protest movements. (5 units)

### *163. Sociology of Work and Occupation*

Ideological and institutional characteristics of modern industrial society and some of its basic problems, such as alienation, affluence and work motivation models, primary group influences, and leadership behavior. (5 units)

### *164. Collective Behavior*

Analytical study of collective behavior principles: typology of crowds, mass behavior, and the characteristics of publics. Introduction to social movements. (5 units)

### *165. Human Services*

Introduction to the field of Human Services. Topics include the connections between societal understanding of social problems, programs, and policies; work and management issues in public and non-profit human service agencies; human services in a multicultural context; opportunities to learn from human service professionals. (5 units)

### *166. Sociology of Crime*

Relationship between crime and society. Discussion of theories of criminal behavior, white-collar crime, juvenile crime, women and crime, prisons, the death penalty, and the philosophy of punishment. (5 units)

### *170. Applied Sociology*

Demonstrates the application of sociological research and insights to the challenges of modern business, human service, and public sector organizations. Practice components bring students into contact with people who are incorporating sociology to improve the functioning of their organizations. (5 units)

### *172. Management of Health Care Organizations*

This course explores the sociological and practical issues of operations, financing, and management in organizations providing services for people with health problems (organizations such as nursing homes and hospitals) or people with infirmities (organizations such as senior care centers and assisted living facilities). (5 units)

### *175. Race and Inequality*

Analysis of the socioeconomic and political situation of African, Asian, Hispanic, and Native Americans in contemporary U.S. society. Topics include race and class, occupational and economic inequality, racial discrimination, the culture of poverty, cultural stereotyping, and resistance to change. (5 units)

### *176. Elder Law*

A survey of public policy issues particularly affecting the elderly. Consideration of the legal aspects of death and dying, involuntary commitment, guardianship and conservatorship, age discrimination, public benefit programs, and nursing homes. (5 units)

### *193. Advanced Seminars in Sociology*

Seminars for juniors and seniors on selected issues in sociology or current problems of social relevance. (5 units)

### *198. Internship*

Opportunity for students to employ sociological insights in human service/community, government, or business organizations. Students spend the majority of class time off campus and then reflect on their experiences sociologically through discussions in class and papers. *Prerequisites: An overall GPA of 2.7 or permission of the sociology co-chair is necessary.* Students must register with the internship coordinator the quarter before they wish to register for the course. This course may be repeated once for credit, under certain circumstances and with the approval of the sociology co-chair. (5 units)

### *199. Directed Reading/ Directed Research*

Intensive reading in areas not emphasized by the department. Independent research on specific topics not fully covered in departmental courses. Written departmental approval necessary in the quarter prior to registration. This course may be repeated once for credit, under certain circumstance and with the approval of the sociology co-chair. (5 units)

## DEPARTMENT OF ART AND ART HISTORY

*Professors:* R. Kelly Detweiler, Samuel R. Hernandez
*Associate Professors:* Brigid S. Barton, Susan Felter *(Chair)*, Kathleen Maxwell
*Assistant Professors:* Katherine Aoki, Bridget Cooks, Constance Cortez, Andrea Pappas
*Senior Lecturer:* Gerald P. Sullivan, S.J.

The Department of Art and Art History offers majors in studio art and art history leading to the Bachelor of Arts degree. Studio art majors learn how to express thought and feeling through creating effective visually based works of art. Art history majors learn how to examine visual art in the context of the nature and evolution of human societies past and present. Both majors integrate theory with practice, so that students choosing studio art will acquire a foundation in art history and those studying art history will acquire practical experience in the process of making art.

Studio art majors develop a comprehensive set of skills necessary for careers in either the fine or commercial arts. Non-majors learn how to express thought and feeling in a liberating hands-on environment. After earning a B.A. degree, some art majors continue developing their professional skills in graduate school, while others move directly into art-oriented jobs, especially in the graphics industry, serving computer and print-related publishing needs.

Studying the history and criticism of art develops skills of research and analysis, reflection and discrimination, and oral and written communication. Art history majors often pursue graduate study as well as jobs in arts administration for museums, galleries, and other professional, commercial, or community arts organizations. The knowledge and skills developed in art history courses also offer an excellent preparation for careers in business, communication, education, government, and law.

Many of the department's courses fulfill University Core requirements in Western Culture, World Cultures/Societies, United States, and Technology, in addition to College of Arts and Sciences requirements in Fine Arts and Ethnic Studies/Women and Gender Studies.

## REQUIREMENTS FOR MAJOR AND MINOR

In addition to completing the requirements specified below, studio art and art history majors must fulfill the requirements of the University Core Curriculum and the College of Arts and Sciences for the Bachelor of Arts degree.

Studio art or art history courses taken during a term of study abroad may normally be applied to no more than half of the requirements for a major or minor in studio art or art history at Santa Clara University. Students who wish to receive credit toward a major or minor for studio art courses taken at other institutions must, in any case, be able to document their work for review by members of the department's faculty.

The studio art major requires a minimum of 14 courses. Studio art majors also normally exhibit their artwork in the spring quarter of their senior year.

1. At least one course from ARTS 30-50, or upper division equivalent. Highly recommended: ARTS 30
2. At least one course from ARTS 63, 64, 163, or 164
3. At least six additional studio art courses, upper-division preferred. Highly recommended for juniors: ARTS 196
4. ARTH 11, 12, and 13 (Note: This sequence may also be used to fulfill the Western Culture Core requirement.)
5. At least one course from ARTH 41-80
6. At least one course from ARTH 100-199
7. At least one additional art history or studio art course

The studio art minor requires seven courses:

1. At least one course from ARTS 30-50 or upper-division equivalent. Highly recommended: ARTS 30
2. At least one course from ARTS 63, 64, 163, or 164
3. At least three additional studio art courses, upper-division preferred. Highly recommended for juniors: ARTS 196
4. At least one course from ARTH 11-13
5. At least one course from ARTH 41-80

The art history major requires 15 courses:

1. ARTH 11, 12, and 13 (Note: This sequence may also be used to fulfill the Western Culture Core requirement.)
2. Any two additional lower-division art history courses
3. Any two studio art courses
4. ARTH 190
5. Six additional courses from ARTH 100-199 *(Note: HIST 157 may be substituted for one of these courses.)*
6. One additional upper-division art history or studio art course

The art history minor requires seven courses:

1. Two courses from ARTH 11-13
2. One additional lower-division art history course
3. One studio art course
4. Three additional courses from ARTH 100-199 *(Note: HIST 157 may be substituted for one of these courses.)*

## STUDIO ART

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes. *Proper credentials will admit a student to the Art Building after closing and on weekends.*

### *30. Basic Drawing*

Introduction to various drawing media and techniques. Covers the use of line and contour, light and shadow, three-dimensional perspective and composition. Includes the concept of self-expression in traditional and contemporary drawing. Recommended as a foundation course, to be taken prior to other studio art courses. (4 units)

### *34. Drawing From Nature*

Introduction to techniques and media for drawing wildlife in the field. Covers the use of line and contour, light and shadow, three-dimensional perspective and composition. Also covers the visual anatomy of birds. Scheduled only during Biology department summer travel programs offered through SCU International Programs. *Prerequisite: BIOL 157 (Spring quarters).* (4 units)

### *35. Basic Printmaking*

Fundamentals of printmaking as an art form. Exploration of such differing media as linoleum and wood block carving and the painterly medium of mono printing. (4 units)

### *37. Basic Etching*

Introduction to classic intaglio printmaking techniques. Includes drawing on metal plates, etching the image with acids, and printing the result on paper. Previous experience in drawing is highly recommended. (4 units)

### *43. Basic Painting*

Introduction to painting, primarily with water-based acrylic paints. Through guided projects, students will develop a language of lines, shapes, colors, and composition to express ideas visually. (4 units)

### *46. Basic Watercolor*

Introduction to visual expression in the classic medium of transparent watercolor. Assignments will emphasize basic elements of shape, color, light, shadow, and composition. Previous experience in drawing recommended. (4 units)

### *50. Basic Photography*

Fundamentals of black and white photography as an art form, especially for the lower-division student. Includes basic camera vision and technique, and black-and-white darkroom work. Assignments attempt to stimulate visual awareness and individual creativity. Camera with manual shutter speeds and aperture capabilities required. (4 units)

### *63. Basic Ceramics*

Fundamentals of visual expression in clay, primarily through making ceramic sculpture. Especially suitable for the lower-division student. Guided exploration of various hand-building techniques and materials, including firing and glazing. May also include other techniques. (4 units)

### *64. Basic Sculpture*

Fundamentals of making art in three-dimensional form, especially suitable for the lower-division student. Creative exploration of selected materials and techniques. Reductive, manipulative, and additive methods will be used as needed. Media varies each quarter at instructor's discretion. (4 units)

### *70. Art in the Computer Age*

A lecture, discussion, and activity course that explores the societal impact of the digital revolution in the arts, especially how Web sites use interface, information, and content to create meaning. Readings and discussion will explore legal, moral, and sociological aspects of the Web as an interactive medium. Introduction to HTML and hands-on Web site construction. (**Note**: does not satisfy the College of Arts and Sciences Fine Arts requirement.) (4 units)

### *74. Basic Computer Imaging*

Hands-on introduction to computer imaging, especially suitable for the lower division student. Fundamentals of using Adobe Photoshop and Illustrator to manipulate photographs and other imagery. Exploration of both fine art and commercial uses of digital media. Recommended as a foundation course, to be taken prior to other computer art courses. (4 units)

### *75. Basic Graphic Design*

Hands-on computer course in the fundamentals of graphic design, especially suitable for the lower-division student. Projects lead students through page layout, creative use of type, and other design problems. Emphasis on learning to use Adobe PageMaker, with some use of Photoshop and Illustrator. Exploration of both fine art and commercial uses of digital media. *Prerequisite: ARTS 74 or 174 or consent of the instructor.* (4 units)

### *97. Special Projects*

For lower-division students who want to do an art project not covered in the bulletin, under the direction of a member of the Art Department faculty. Group meetings with the instructor to discuss progress. May be repeated for credit. *Open to majors and nonmajors with consent of instructor.* (4 units)

### *131. Life Drawing*

Theory and practice of figure drawing. Emphasis on understanding the structure of the human form as a resource for visual expression. May be repeated for credit. *Prerequisite: ARTS 30 or consent of the instructor.* (5 units)

### *133. Advanced Drawing*

Continuation of ARTS 30 with an emphasis on the study of perspective and the anatomy of light and shadows as they relate to drawing three-dimensional forms. *Prerequisite: ARTS 30 or consent of the instructor.* (5 units)

### *135. Printmaking*

Continuation and extension of ARTS 35. Elaboration and refinement of printmaking. Also appropriate for the upper-division student who wants to learn the fundamentals of printmaking as an art form. *No prerequisite.* May be repeated for credit. (5 units)

### *137. Etching*

Continuation and extension of ARTS 37. Elaboration and refinement of etching. Also appropriate for the upper-division student who wants to learn the fundamentals of etching as an art form. Previous experience in drawing or etching recommended. May be repeated for credit. (5 units)

### *143. Painting*

Continuation and extension of ARTS 43. Further study of various styles, techniques, and media in painting. Also appropriate for the upper-division student who wants to learn the fundamentals of painting as an art form. *No prerequisite.* May be repeated for credit. (5 units)

### *144. Advanced Painting*

Designed for the intermediate- to advanced-level painting student. Assignments help students develop conceptual and formal strategies to create a series of related works that revolve around each student's individual artistic interests. Painting form and technique, as well as conceptual content and meaning, will be explored in depth, through practice and discussion. *Prerequisite: ARTS 43 or 143 or consent of the instructor.* (5 units)

### *146. Watercolor*

Continuation and extension of Studio Art 46. Further study of the techniques and materials of watercolor painting. Also appropriate for the upper-division student who wants to learn the fundamentals of watercolor as an art form. May be repeated for credit. *Prerequisite: ARTS 30 or 43 or 46, or consent of instructor.* (5 units)

### *150. Photography*

Fundamentals of black-and-white photography as an art form, especially for the upper-division student. Includes basic camera vision and technique, as well as black-and-white darkroom work. Assignments attempt to stimulate visual awareness and individual creativity. Camera with manual shutter speeds and aperture capabilities required. May be repeated for credit by consent of the instructor only. (5 units)

### *151. Advanced Photography*

Intermediate- to advanced-level photography. Emphasis on B/W, including darkroom work. Includes the use of natural and artificial light in planned and semi-planned scenes of people and other subjects. Final projects appropriate to the interests and abilities of each student. Includes discussion of photography as it relates to contemporary fine art theory and practice. May be repeated for credit. *Prerequisite: ARTS 50 or 150 or consent of the instructor.* (5 units)

### *152. Snapshot Photography*

Course covers the fundamentals of technical and creative camera operation. Darkroom work is not included, but students will learn how to get the most out of low-cost film and print processing services. Concepts and shooting assignments will give students a foundation in both black and white and color photography. (2 units)

### *154. Color Photography*

Introduction to color for the intermediate photography student. Exploration of materials, techniques, and aesthetic issues, using both structured assignments and projects based on individual interests. Emphasis on using color print film in various lighting conditions and digital darkroom techniques with PhotoShop to make ink jet prints. May be repeated for credit. *Prerequisite: ARTS 50 or 150, and ARTS 74 or 174, or consent of the instructor.* (5 units)

### *155. Photography on Location*

Designed for the intermediate- to advanced-level photography student interested in exploring the social and physical world we live in. Includes both collaborative and individual photographic projects, with field trips off campus to shoot on location, as well as visit exhibitions and professionals in the field. Primarily B/W, with some attention to color photography as well. *Prerequisite: ARTS 50 or 150, or consent of the instructor.* (5 units)

### *163. Ceramics*

Continuation and extension of ARTS 63. Fundamentals of visual expression in clay, primarily through making ceramic sculpture. Especially suitable for the upper-division student. Guided exploration of various hand-building techniques and materials, including firing and glazing. May also include other techniques. May be repeated for credit. (5 units)

### *164. Sculpture*

Continuation and extension of ARTS 64. Also appropriate for the upper-division student who wants to learn the fundamentals of sculpture as an art form. Creative exploration of selected materials and techniques. Reductive, manipulative, and additive methods will be used as needed. Media varies each quarter at instructor's discretion. May be repeated for credit. (5 units)

### *165. Advanced Ceramics*

Suitable for the intermediate and advanced student. In-depth exploration of various hand-building techniques for creating ceramic sculpture, and related work. Includes some discussion of aesthetic issues in contemporary ceramic art. Emphasis will be on development of each student's artistic and technical interests and abilities, toward the goal of creating an individual collection of works. May be repeated for credit. *Prerequisite: ARTS 63 or 163 or consent of instructor.* (5 units)

### *174. Computer Imaging*

Hands-on course in the fundamentals of computer imaging, especially suitable for the upper-division student. Introduction to the use of Adobe Photoshop and Illustrator to manipulate photographs and other imagery. Exploration of both fine art and commercial uses of digital media. May be repeated for credit by consent of the instructor only. (5 units)

### *175. Graphic Design*

Hands-on computer course in the fundamentals of graphic design, especially suitable for the upper-division student. Projects lead students through page layout, creative use of type, and other design problems. Emphasis will be on learning to use Adobe PageMaker, with some use of Photoshop and InDesign. Exploration of commercial and artistic uses of digital media. May be repeated for credit. *Prerequisite: ARTS 74 or 174, or consent of the instructor.* (5 units)

### *176. Advanced Computer Imaging*

In-depth exploration of image processing through advanced projects suitable to the interests and abilities of each student. Emphasis on the use of Photoshop and Illustrator. Includes comparison of commercial and fine art practices. May be repeated for credit. *Prerequisite: ARTS 74 or 174 and ARTS 75 or 175, or consent of the instructor.* (5 units)

### *177. Constructing Web Sites*

An intermediate- to advanced-level course in designing for the Web, using such programs as Flash, Dreamweaver, and/or GoLive. Theory and practice of graphic and interface design for Web sites. Each student will design and construct a Web site of his or her choice. May be repeated for credit. *Prerequisites: ARTS 70 and one course from ARTS 74, 75, 174, 175, or consent of the instructor.* (5 units)

### *178. Advanced Graphic Design*

In-depth exploration of graphic design through advanced projects suitable to the interests and abilities of each student. Emphasis on the use of Adobe Photoshop, Illustrator, Dreamweaver, and Quark. Exploration of selected topics in both screen and print design. May be repeated for credit. *Prerequisites: ARTS 74 or 174, and ARTS 75 or 175, or consent of the instructor.* (5 units)

### *179. Multimedia/Interactive Projects*

In-depth exploration of Macromedia Director software. Includes making storyboards and assembling still and video images with music or sound to create an interactive experience. Animation techniques may also be covered. Other software may include ImageReady, AfterEffects, and Flash. May be repeated for credit. *Prerequisite: ARTS 74 or 174 and ARTS 75 or 175, or consent of the instructor.* (5 units)

### *196. Studio Art Seminar*

Exploration of and preparation for postgraduate options in studio art. Includes portfolio and presentation development, artist statements and resume writing, and photographing artwork. Also includes field trips to studios of artists, designers, and graduate schools. (5 units)

### *197. Special Projects*

For advanced students who want to do an art project not covered by courses in the catalog, under the direction of a member of the department faculty. Group meetings to discuss progress with one another and with the teacher. May be repeated for credit. Open to majors; nonmajors with consent of instructor.

### *198. Internship/Practicum*

Individual projects in conjunction with a professional visual arts organization. Variable units. May be repeated for credit. *Prerequisite: Written proposal must be approved by supervisory studio art faculty member and department chair.* (5 units)

### *199. Directed Research/ Creative Project*

Tutorial work in studio art. May be repeated for credit. *Prerequisite: Written proposal must be approved by studio art instructor and department chair.* (1–5 units)

## ART HISTORY

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *11. Western Culture: Art History I*

Survey of the art and architecture of the Western world from ancient through medieval times. (4 units)

### *12. Western Culture: Art History II*

Survey of the art and architecture of the Western world from the 14th through the 17th century. (4 units)

### *13. Western Culture: Art History III*

Survey of the art and architecture of the Western world from the 18th century to the present. (4 units)

### *43. Introduction to Art of the United States*

Introduction to the visual arts of the United States from the Colonial period to the present. American visual expression in painting, photography, sculpture, architecture, and "outsider art" will be examined in the context of the political and social events that have shaped the nation. (4 units)

### *46. Introduction to African American Art*

Investigation of the history and aesthetics of African American art with an emphasis on the politics of cultural representation. Students will use course readings and class discussion as the primary means of analyzing the ideas being considered. (Also listed as ETHN 31.) (4 units)

### *50. Pre-Columbian Art of Mesoamerica and the Andes*

Introduction to the painting, sculpture, and architecture of selected cultures of Mesoamerica and the Andes prior to European arrival. Emphasis placed on the critical examination of past and current scholarship. (4 units)

### *51. Colonial Art of Mexico and Peru*

Survey of 16th-, 17th-, and 18th-century art of the Colonial period of Mexico and Peru. Particular emphasis placed on the art and architecture of Mexico City, Yucatan, Cuzco, and Lima. (4 units)

### *52. Modern Latin American Art*

Survey of art produced in Mexico and South American countries during the 19th and 20th centuries. Special emphasis placed on early 20th-century nationalist movements in Mexico, Argentina, and Brazil. (4 units)

### *53. Modern Mexican Art*

Examination of the art of 19th- and 20th-century Mexico. Topics include 19th-century landscape painting, art in the time of revolution, and the Mexican Muralists. (4 units)

### *80. Arts of Africa, Oceania, and the Americas*

Comparative study of the arts of selected cultures that developed outside the spheres of the major European and Asian civilizations. Emphasis on the function of the arts in these disparate geographic regions. (4 units)

### *97. Special Topics*

Occasional courses in selected art historical topics. May be repeated for credit. (4 units)

### *104. Greek Art and Architecture*

Examination of Greek art from the Geometric through the Hellenistic periods. Developments in architecture, sculpture, vase painting, and wall painting will be addressed in their cultural context. (5 units)

### *106. Roman Art and Architecture*

Chronological survey of artistic development in Republican and Imperial Rome. Related issues include the influence of Greek and Etruscan art, the impact of political ideology on public programs, and the effect of improved materials on building design. (5 units)

### *110. Early Christian and Byzantine Art*

Survey of Christian art and architecture from the catacombs in Rome through the early 14th century in Byzantium. Highlights include the Constantinian monuments of Rome, Justinianic Ravenna and Constantinople, iconoclasm, and the Macedonian "Renaissance." (5 units)

### *114. Early Medieval Art*

Survey of art and architecture in Western Europe from the early Middle Ages to circa A.D.1000. Hiberno-Saxon, Carolingian, and Ottonian art discussed in their respective political, intellectual, and cultural contexts. (5 units)

### *116. Romanesque and Gothic Art*

Study of religious art and architecture in Western Europe from the 11th through the 14th centuries. Comprehensive survey of the high Middle Ages that considers structural form, technique, sculptural programs, and related minor arts. (5 units)

### *120. Early Renaissance Art*

Painting, sculpture, and architecture in Italy from the late 13th to the late 15th century. Emphasis on the foundations and first flowering of the Renaissance style in its cultural context, with particular attention to Florence and Siena. (5 units)

### *122. High Renaissance and Mannerist Art*

Painting, sculpture, and architecture in Italy in the 16th century. Emphasis on the mature elaboration and manipulation of the Renaissance style, with particular attention to Florence, Rome, and Venice. (5 units)

### *124. Northern Art in the Renaissance Period*

The visual arts in Northern Europe from the late 14th through the 16th century, with particular attention to Flanders, Germany, and France. (5 units)

### *128. Baroque Art*

Painting, sculpture, and architecture throughout Europe from the late 16th through the early 18th century. Particular emphasis on Italy, Spain, Flanders, Holland, and France. (5 units)

### *135. European Art: 1780–1880*

Neoclassicism, Romanticism, and Realism in the context of 19th-century culture in Europe. Survey of painting, sculpture, and architecture in this period. (5 units)

### *137. Modern Art in Europe: 1880–1940*

Analysis of Post-Impressionism, Cubism, Expressionism, Surrealism, and other important early modernist movements in Europe. Painting, sculpture, and architecture relative to major historical trends from the late 19th-century to World War II. (5 units)

### *140. Chicano/a Art*

A broad look at Chicano/a art from 1848 to the present from Texas, New Mexico, and California. Topics include Mission architecture, santos and santeros, performance art, mural painting, women in the arts, and border art. Field trips. *Suggested preparation: ARTH 50 or 51 or consent of instructor.* (5 units)

### *141. Native American Art*

Survey of pre- and post-contact Native American art from the Far North, the Northwest Coast, California, and the Southwest. Suggested preparation: ARTH 80 or consent of instructor. (5 units)

### *144. Art of the United States to 1913*

Visual and material arts from the Colonial period to the Armory Show. Issues examined may include the relationship between art and politics, ideology and landscape, American national identity at home and abroad, the western frontier, the representation of the Civil War, and the creation of an audience for art in the United States. (5 units)

### *145. Art of the United States from 1913*

Visual culture in the United States from the impact of European modernism to circa 1970. Issues examined may include the relationship between art and politics, American national identity, the Harlem Renaissance, California modernism, the growth of audiences for art in the United States, and the relationship between United States art and Mexico and the Pacific Rim. (5 units)

### *147. African American Women in the Visual Arts*

Exploration of the history of visual art created by African American women from the 18th century to the present in a variety of media including textiles, painting, sculpture, photography, installation, and performance. Emphasis on African American women's experiences, perspectives, and strategies for self-representation in the visual arts. First-year students subject to administrative withdrawal. (Also listed as ETHN 135.) (5 units)

### *148. African Americans and Photography*

Examination of the history of photography in relationship to African American culture through a variety of media from early daguerreotype processes to digital imagery. Emphasis on African American photographers' experiences, perspectives, and strategies for representation in visual culture. First-year students subject to administrative withdrawal. (Also listed as ETHN 136.) (5 units)

### *150. Maya Art*

Survey of Maya art and culture from pre-Contact times through the first 100 years of Colonial rule. Emphasis on the critical examination of past and current scholarship. *Recommended preparation: ARTH 50 or 80.* (5 units)

### *151. Aztec Art*

Survey of Aztec art and culture from pre-Contact times through the first 100 years of Colonial rule. Emphasis placed on the critical examination of past and current scholarship. *Recommended preparation: ARTH 50.* (5 units)

### *153. Colonial Art of Mexico*

Examination of the Colonial art, architecture, and popular arts of Mexico during the 16th and 17th centuries. Topics may include mendicant architecture, the decorative arts, the indigenous contribution to Colonial art, and portraiture. *Prerequisite: ARTH 50 or 51 or consent of instructor.* (5 units)

### *160. Arts of Asia*

Using slide presentations, this lecture course introduces students to the main trends of art developed in the past 6,000 years in Asian countries, emphasizing the arts of China and Japan. (5 units)

### *164. Art of Islam*

Survey of the art and architecture of the Islamic world from the 7th through 19th centuries. In addition to the architecture of Spain, Iran, Turkey, the Arab countries, and India, the course will address the so-called minor arts, including ceramics, metalwork, manuscripts, and rugs. (5 units)

### *180. Museum Studies*

Practicum in the varied aspects of museum work. Field trips and guest lecturers from Bay Area museums. *Prerequisite: Consent of instructor.* (5 units)

### *183. Post-War Art of Europe and America*

Survey of developments in the visual arts, primarily in Europe and America, from 1940 to the present. Issues examined include the arts and World War II, international consumer culture, the creation and development of new art forms (performance, video, installation, etc.), art criticism, and the role of multiculturalism in the arts. (5 units)

### *186. History of Photography*

Examination of technical, social, political, and aesthetic aspects of photography from its inception to the present, primarily in Europe and the United States. Issues examined may include: the creation and growth of popular and elite audiences for photography; journalistic, art, and fashion photography; the role of photography in discourse on race, gender, and class; photography in relation to modernism, postmodernism, and consumer culture. (5 units)

### *188. Women in the Visual Arts*

Historical and theoretical approaches to women in the visual arts. Issues examined may include the status of women artists, patrons and collectors, images of women, and the impact of women's studies and feminism on the study of the visual arts. (5 units)

### *190. Art History Proseminar*

Origins of the discipline and its current methodologies. Techniques for more effective research, analysis, writing, and oral presentation. Open to all students; required for all art history majors, preferably during their sophomore year. *Prerequisite: At least two art history courses.* (5 units)

### *196. Art History Seminar*

Advanced topics in the history, theory, and methods of art history as a discipline. Recent challenges and expansions to the discipline, such as the study of visual and material culture, may be considered. Focus of the seminar will vary with instructor. Recommended for all art history majors in their junior or senior year. Course requirements will include one or more writing projects entailing multiple drafts. Enrollment by consent of instructor. (5 units)

### *197. Special Topics*

Occasional courses in selected art historical topics. May be repeated for credit. (5 units)

### *198. Internship/Practicum*

Individual projects in conjunction with professional visual arts agencies. Variable credit. May be repeated for credit. *Prerequisite: Written proposal must be approved by supervisory art history faculty member and department chair.* (5 units)

### *199. Directed Reading/ Directed Research*

Individually guided reading, research, and/or writing on selected art historical topics. May be repeated for credit. *Prerequisite: Written proposal must be approved by art history instructor and department chair.* (1–5 units)

## DEPARTMENT OF BIOLOGY

*Professor Emeritus:* Thomas N. Fast
*Professors:* William R. Eisinger, John S. Mooring, Dennis R. Parnell, S.J.
*Associate Professors:* Elizabeth P. Dahlhoff, Janice Edgerly-Rooks, James L. Grainger, Leilani M. Miller, Craig M. Stephens, David L. Tauck *(Chair)*
*Assistant Professors:* Ángel L. Islas, Michelle A. Marvier, Amy Hoa Moore
*Senior Laboratory Instructor:* Elizabeth Bell
*Clare Boothe Luce Professor:* Amy Hoa Moore

The Department of Biology offers a program leading to the Bachelor of Science degree. The major provides students a broad background in biology that serves as a strong foundation for graduate, medical, or professional studies as well as for careers in teaching, research, or business. Most courses emphasize laboratory work. In addition, some students assist faculty in their own research. The department also offers courses of general interest to all University students who are curious about the nature of living things. A minor in biology is available.

**http://www.scu.edu/biology**

## REQUIREMENTS FOR THE MAJOR AND MINOR

In addition to completing the University Core Curriculum and College requirements for the Bachelor of Science degree, students majoring in biology must complete the following departmental requirements:

1. BIOL 21, 22, 23, 24, 25
2. A minimum of seven upper-division biology courses, at least five of which must have a laboratory. Also, students must take at least one upper-division course in each of the following categories: plant, animal, population, and cell. A single course may not be used to satisfy the requirement in more than one category.
3. CHEM 11, 12, 13, 31, 32
4. PHYS 11, 12, 13 or PHYS 31, 32, 33
5. MATH 11, 12. MATH 9 is a suitable introduction to MATH 11 for students preparing for calculus. However, units earned in MATH 9 *do not* apply toward the total units required for graduation.
6. In addition, the following courses may be required for admission to graduate or professional schools and provide a more thorough foundation in mathematics and chemistry: CHEM 33, CHEM 141, MATH 8, MATH 13.

### Minor in Biology

A minor in biology is also available. It requires completion of a minimum of three upper-division biology courses including two with a laboratory component. Enrollment in all upper-division courses in the department requires the prior completion of either BIOL 24 or BIOL 25, both of which have biology and chemistry prerequisites. Please see course listings for details.

## Minors in Related Areas

1. ***Biotechnology Minor*** The minor is designed for students interested in gaining insight into the science underlying biotechnology, exploring its potential for the future, and obtaining practical experience in laboratory techniques used in the biotechnology research and its applications. (See "Interdisciplinary Minors and Other Programs of Study" for details.)
2. ***Environmental Studies Minor*** The minor provides an opportunity for students to focus on environmental issues through a variety of academic approaches in the humanities, social and natural sciences, engineering, and law. (See "Environmental Studies Institute" for details.)

## PREPARATION IN BIOLOGY FOR ADMISSION TO TEACHER TRAINING CREDENTIAL PROGRAMS

*Coordinator:* William R. Eisinger

The State of California requires that students seeking a credential to teach biology in California secondary schools either pass a subject area examination or successfully complete a state-approved Subject-Matter Preparation Program in the sciences. The Department of Biology offers a state-approved program with a biology concentration that satisfies the subject-matter competency requirement for teaching biology at the secondary level. The science subject-matter program with a biology concentration satisfies the requirements for a Bachelor of Science degree in biology but includes some specific additional courses many of which also meet University and College Core requirements. These include:

- Introduction to Earth Sciences: (PHYS 9) and Geology (CENG 20)
- Introduction to Secondary School Teaching: Practicum (EDUC 98B/198B) and Introduction to Teaching in a Multicultural Society (EDUC 163)
- One from the following: Philosophy and Science (PHIL 140), Issues in Theology and Science (TESP 151), Religion, Science, and the Environment (TESP 173)
- One ethics course from the following: Technological Ethics (ENGR 19), Ethical Issues in Medicine (PHIL 7), Ethics and the Environment (PHIL 9), or Science, Technology, and Ethics (PHIL 117)
- One technology course from the following: Understanding Digital Technology (COEN 1), From Telegraph to the Internet (ELEN 10), Use of Computers in Chemistry (CHEM 120), Introduction to Computing and Applications (MATH 3), or Introduction to Computer Science (MATH 10)
- One course on the U.S. Constitution from: Colonies and Constitution (HIST 7), United States: The 19th Century (HIST 8), or Revolution, Confederation, Constitution (HIST 170)
- One visual and performing arts course: Public Speaking (COMM 20)

- Upper division electives: Genetics (BIOL 110), Molecular Biology (BIOL 175), Comparative Physiology (BIOL 120), Microbiology (BIOL 113), General Ecology (BIOL 156), and Evolution (BIOL 173)
- One additional elective course from: Conservation Biology (BIOL 150), Biology of Insects (BIOL 158), Contemporary Issues in Biology (BIOL 190), Project Lab (BIOL 191B), Undergraduate Research (BIOL 198), or Biochemistry (CHEM 141)

In addition, students must complete related field work and an individual portfolio to be reviewed by the single subject matter program coordinator. Because the requirements are very specific, students who are contemplating secondary teaching should consult with the coordinator in the Department of Biology as soon as possible. The secondary teaching credential additionally requires the completion of an approved credential program which can be completed as a fifth year of study and student teaching or through an undergraduate summer program and internship.

## RESEARCH OPPORTUNITIES

Students are encouraged to participate in original research as part of their undergraduate training. Most faculty involve students in their research programs; opportunities also exist at neighboring institutions. Qualified students can obtain course credit for research by enrolling in Biology 198.

### Howard Hughes Medical Institute Summer Research Program

The Biology and Chemistry departments offer a summer program for qualified students to do research with participating Santa Clara University faculty. This 10-week program offers the opportunity for students to do research and participate in discussions dealing with current ethical issues facing the scientific community. Students will receive a stipend and on-campus housing.

## LOWER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

***1. Genetics, Evolution, and Humankind***

Introductory survey of the key discoveries and principles that have shaped and advanced the modern theory of organic evolution. Examines the role of this theory in the development of the present understanding of the origin of the human species. Also considers controversies surrounding the theory of evolution as well as the future evolution of humankind. (4 units)

***2. Human Health and Disease***

Examination of health and disease of the human organism. Topics include what constitutes health, natural defense mechanisms, the immune system and its role in disease prevention, major diseases and their causes, and community health. (4 units)

### *3. Fitness Physiology L&L*

The purpose of this course is to acquire a basic understanding of how the human body functions to maintain a state of wellness. We will explore the short-term responses to exercise and discuss how the body responds to long-term exercise (training) programs. At the end of the course, students should be able to examine the design of exercise physiology experiments, as well as understand and interpret reports of health and exercise news in the popular press. Laboratory 15 hours. (4 units)

### *4. Light and Life L&L*

This course focuses on the importance of plants and photosynthesis for the future of life on earth. Issues addressed include food production, plants as renewable energy sources, "greenhouse effect," and using plants to remove toxic wastes from the environment. In the laboratory students design experiments to examine the effects of environmental changes on photosynthesis. Laboratory 15 hours. (4 units)

### *5. Endangered Ecosystems L&L*

This course provides an overview of earth's ecosystems and the major factors contributing to the loss of biodiversity. We will cover three major themes: (1) general ecological principles, especially focused on the structure and function of ecosystems; (2) factors contributing to the endangerment of ecosystems; and (3) the conservation of ecosystems and biodiversity. Although we will cover a number of global environmental problems, several lectures will highlight current environmental and conservation issues here in California and within the San Francisco Bay Area. Laboratory 15 hours. (4 units)

### *6. The Oceans L&L*

Examination of major ocean ecosystems and their inhabitants, with special attention paid to issues of governmental policy and management, fisheries, and global population effects. Laboratory activities will emphasize local and regional marine habitats and human impacts on regional ecosystems. Laboratory 15 hours. (4 units)

### *7. Heart and Body L&L*

The heart plays a central role in many aspects of physiology. We will focus on how it interacts with the lungs and kidneys to maintain the conditions inside the body in a more or less constant state, emphasizing how scientists have discovered the functions of the heart and its body. Laboratory 15 hours. (4 units)

### *8. Ecosystems of the Bay Area L&L*

This course explores the diversity of organisms in local ecosystems, human ecology and its effects on natural resources, as well as techniques for teaching science and the scientific method. Laboratory and field activities will emphasize the identification of organisms and their adaptations. Laboratory 15 hours. (4 units)

### *21. Physiology*

Physiology will focus on the general principles underlying homeostasis in different environments. The first third of the course will introduce students to the organization and function of cells, protein structure, membrane transport, basic metabolism, and contractility. This introduction will provide the foundation for exploring gas exchange, circulation, osmoregulation, energy control balance, and thermoregulation in a variety of animal models. *Prerequisites: Completion of or concurrent enrollment in CHEM 11.* (4 units)

### *22. An Introduction to Evolution and Ecology*

Introduction to major concepts in evolution and ecology. Topics in evolution include genetic and phenotypic variation, natural selection, adaptation, speciation, macroevolution, and biodiversity. Topics in ecology include demography, interactions among organisms, abiotic factors that limit the distribution or abundance of organisms, and basic processes in ecosystems. Discussion of the scientific process. (4 units)

### *23. Investigations in Evolution and Ecology L&L*

This course builds on concepts presented in An Introduction to Evolution and Ecology. Focus on laboratory experiments and field observations designed to investigate particular problems in ecology and evolution, including biodiversity. Emphasis on data analysis and interpretation. Discussion of results in terms of relevant theory. Laboratory 30 hours. *Prerequisites: BIOL 22.* (4 units)

### *24. Cell Biology/Genetics*

An introduction to the cell and molecular fundamentals necessary for life. Topics include macromolecular structure, enzyme function, membrane structure and physiology, metabolism and bioenergetics, the cell cycle, and classical and molecular genetics. *Prerequisites: BIOL 21 and CHEM 31 (or concurrent enrollment).* (4 units)

### *25. Investigations in Molecular Biology L&L*

An introduction to experimental methods for studying the cellular and molecular basis of life. This course builds on the concepts covered in BIOL 24. Topics include enzyme function and kinetics, cell reproduction, Mendelian genetics, and molecular biology. The topics are explored through laboratory work, with emphasis placed on the analysis, interpretation, and presentation of experimental data. Laboratory 30 hours. *Prerequisites: BIOL 24 and CHEM 32 (or concurrent enrollment)* (4 units)

### *99. Special Topics*

Investigation of a specific area or topic in the biological sciences. Open to majors and nonmajors. (4 units)

## UPPER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *110. Genetics L&L*

Basic principles governing inheritance and gene expression in viruses, prokaryotes, and eukaryotes. Emphasis on molecular aspects. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *112. Pathogenic Microbiology L&L*

Study of disease-producing bacteria, rickettsiae, and fungi. Emphasis on specific and nonspecific host-defense mechanisms, identification, pathogenesis, epidemiology and control, and community health issues. Laboratory 30 hours. *Prerequisite: BIOL 25. Recommended: BIOL 113.* (5 units)

### *113. Microbiology L&L*

An introduction to the biology of microorganisms, with emphasis on the molecular and cellular biology of bacteria, the diversity of microbial life, and the roles of microorganisms in human health and disease. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *115. Animal Development L&L*

Experimental and anatomical analysis of vertebrate development. Emphasis on cellular and molecular mechanisms that control morphogenesis, differentiation, and growth. Laboratory 30 hours. *Prerequisite: BIOL 25. Recommended: BIOL 110.* (5 units)

### *120. Comparative Physiology L&L*

Examination and comparison of mechanisms used by a variety of animals to survive and function in their environment. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *121. Toxicology*

Toxicology deals with the identification of toxins and their distribution in the environment, and their actions within both humans and other living things. We will identify several important sources of toxins and study their effects on humans in some detail. Many of the same concepts will then be applied to toxic actions on other lifeforms. Distribution of, and elimination of, toxins within the environment will also be discussed. *Prerequisites: BIOL 13 or 14.* (5 units)

### *122. Neurobiology L&L*

An introduction to the nervous system, focusing on the anatomy, physiology, and pharmacology of neurons, synapses, and simple neural circuits. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *124. Human Physiology L&L*

Examination of the physical and chemical basis of human life, focusing on the control mechanisms of selected major organ systems. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *125. Plant Physiology L&L*

Physiological processes of plants. Emphasis on current research in the field. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *128. Plant Development L&L*

Developmental processes of plants. Emphasis on current research and experimental approach. Laboratory 30 hours. *Prerequisites: BIOL 25.* (5 units)

### *131. Agroecology L&L*

The goal of agroecology is to reduce the negative environmental impact of farming while meeting the food needs of the world. The course examines current agricultural practices and evaluates alternative methods including organic farming, agroforestry, and applications of agricultural biotechnology. The special problems of agriculture in the developing world are discussed. Laboratory 30 hours. *Prerequisite: BIOL 24.* (5 units)

### *133. Ecology of California Plant Communities L&L*

California plant communities and the factors that determine their distribution. Laboratory and field work 30 hours. *Prerequisite: BIOL 24.* (5 units)

### *145. Virology*

Study of viruses: their structure and classification, experimental cultivation, quantification, classes of viral replication and viral pathogenesis and disease. *Prerequisite: BIOL 25; Recommended: CHEM 141.* (5 units)

### *150. Conservation Biology L&L*

This course will focus on the applications of ecological principles and methods to the conservation and maintenance of biodiversity. Students will gain experience in the application of quantitative tools, including trend analysis, matrix methods, and stochastic simulations. Laboratory and fieldwork 30 hours: will involve field exercises with local plants and animals, as well as computer exercises using data for endangered species such as spotted owls and desert tortoises. *Prerequisite: BIOL 24.* (5 units)

### *156. General Ecology L&L*

Quantitative study of the interrelationships of organisms with their biotic and abiotic environments. Emphasis on population dynamics, interspecific relationships, community structure, and ecosystem processes. Laboratory and field work 30 hours, including one weekend field trip. *Prerequisites: BIOL 24 and MATH 11.* (5 units)

### *157. Environmental Biology in the Tropics*

Also listed as ENVS 141. For course description see ENVS 141.

### *158. Biology of Insects L&L*

An introduction to basic and applied aspects of insect biology, with emphasis on evolution, morphology, physiology, and behavior of insects and related arthropods. Also includes a review of important agricultural, medical, forestry, and veterinary pests. Laboratory 30 hours. *Prerequisite: BIOL 24.* (5 units)

### *160. Biostatistics L&L*

This is a course in applied statistics for biologists planning to conduct manipulative experiments. The course will provide biologists with training in experimental design and quantitative analyses in cases where specific experimental hypotheses are to be tested. Theory and concepts will be covered in lectures and readings from the textbook. Laboratory sessions will provide practical experience in computing statistical procedures by hand and on computers. Examples used in lectures and lab assignments will be derived from medical research, physiology, genetics, evolution, ecology, and environmental risk assessment. Laboratory 30 hours. *Prerequisite: BIOL 24.* (5 units)

### *165. Animal Behavior L&L*

Examination of the behavior of animals in nature using an organizational scheme that recognizes proximate, or immediate, causes of behavior and evolutionary bases for behavior. Topics include physiological correlates of behavior, perception of natural stimuli (light, sound, chemicals); and behavioral ecology of foraging, mating systems, parent-offspring relationships, and social behavior. Laboratory 30 hours. *Prerequisite: BIOL 24.* (5 units)

### *171. Ethical Issues in Biotechnology and Genetics*

An introduction to normative theory and the major ethical issues arising from recent advances in biotechnology and genetics. Among the issues to be examined are: ethical theories (philosophical and theological), genetic research and intervention, agricultural and human cloning, stem cell and fetal tissue research, resource allocation, professional responsibilities, and public policy. *Prerequisites: BIOL 24 or permission of instructor. BIOL 25 is strongly recommended.* BIOL 171 satisfies a biotechnology minor requirement but NOT the upper-division biology major requirements. (5 units)

### *173. Evolution*

Examination of the concepts and critical issues concerning organic evolution, including the origins and maintenance of biological diversity, punctuated equilibrium theory, sociobiology, and molecular evolution. *Prerequisite: BIOL 24. Recommended: BIOL 110.* (5 units)

### *174. Cell Biology*

Study of the function and assembly of cellular organelles and the signal pathways that control cellular proliferation. *Prerequisite: BIOL 25.* (5 units)

### *175. Molecular Biology L&L*

An introduction to the molecular events involved in the replication and decoding of the genetic material. Lectures focus on basic molecular biology concepts and recombinant DNA technology. Laboratory 30 hours. *Prerequisite: BIOL 25.* (5 units)

### *176. Biotechnology Lab I: Recombinant DNA L&L*

This course emphasizes techniques for the analysis of DNA and the construction and manipulation of recombinant DNA molecules. Laboratory meets twice each week. Lectures will discuss the scientific basis for the lab methods and the manner in which these methods can be applied in biomedical research and the biotechnology industry. Laboratory 60 hours. *Prerequisites: BIOL 25 and at least one upper-division biology laboratory course. (Does not include field courses.) BIOL 175 recommended.* (5 units)

### *177. Biotechnology Lab II: Gene Expression and Protein Purification L&L*

The course will explore the principles and techniques of the expression and purification of recombinant mammalian proteins. Laboratory meets twice each week and will use techniques such as column chromatography, mammalian tissue culture, and various gene expression systems. Lectures will discuss the theory behind the methods used in lab as well as their application in basic and applied research. Laboratory 60 hours. *Prerequisites: BIOL 25 and at least one upper division biology laboratory course. (Does not include field courses.) BIOL 175 recommended.* (5 units)

### *187. Biology of Aging*

Analysis of the human aging process. The biological, medical, social, and ethical issues associated with aging in America. Topics include theories of aging, cancer, osteoporosis, sexuality, health-care costs, and death. Open to all students. Does not count toward a major or minor in biology. (5 units)

### *189. Topics in Cell and Molecular Biology*

This seminar course deals with current journal articles in cell, molecular, and biotechnology. Students are required to lead discussions and participate in the critical analysis of these articles. *Prerequisites: Completion or concurrent enrollment in Genetics, Animal Development, Cell Biology, Microbiology, or Molecular Biology. Students who have completed BIOL 25 are welcome to attend and participate in the discussion of these topics but may not take the course for credit until they have completed one of the prerequisites.* (3 units)

### *190A and 190B. Contemporary Issues in Biology*

Specialized treatment of some aspect of biology of current interest to the biologist as well as to society in general. *Prerequisites will be specified according to topic.* (5 units) NCX†

### *191B. Project Lab: Biochemical Adaptations*

Project lab is an intensive, research-oriented course in which students conduct independent projects directly related to ongoing studies in the professor's laboratory. The course also emphasizes development of critical thinking, experimental design, and scientific writing skills. We will examine mechanisms by which ectothermic animals alter biochemical and physiological processes in response to fluctuations in temperature. Research will focus on several species of native California willow beetles and web-spinning insects. Student projects will involve both fieldwork and laboratory experiments and will be designed collaboratively by students and professor. Laboratory 60 hours. *Prerequisites: BIOL 25 (required) and at least one upper-division biology lab course.* (5 units)

### *192. Topics in Conservation Biology*

This seminar course will focus on current journal articles in the field of conservation biology. Students are required to lead discussions and participate in the critical analysis of these articles. *Prerequisites: Completion of or concurrent enrollment in BIOL 150, BIOL 156, or BIOL 155, or by consent of instructor.* (5 units)

### *198. Internship and Undergraduate Research*

Students wishing to take either 198A or 198B should have a GPA of 3.0 or better in biology and must present an outline of their projected research to the chair not later than the fifth week of the term preceding the start of the project. (2–5 units)

### *198A. Internship*

Research in off-campus programs under the direct guidance of cooperating research scientists and faculty advisors. (5 units)

### *198B. Undergraduate Laboratory Research*

Supervised laboratory research culminating in a written report suitable for publication. Sustained for one year with credit given for one term. *Prerequisite: Departmental and University permission.* (5 units) NCX†

### *199. Directed Reading and Research*

Detailed investigation of a specific topic in biology under the close direction of a faculty member. Students wishing to take this course should have a GPA of 3.0 or better in biology and must present an outline of their projected research to the department chair not later than the fifth week of the term preceding the start of the project, which will continue for one term only. *Prerequisite: Departmental and University permission.* (5 units) NCX†

† Exempted from challenge

## DEPARTMENT OF CHEMISTRY

*Professors Emeriti:* Lawrence C. Nathan, Robert J. Pfeiffer, William F. Sheehan, Michael A. Sweeney
*Professors:* Patrick E. Hoggard *(Chair)*, W. Atom Yee
*Associate Professors:* Linda S. Brunauer, Brian J. McNelis, Amy M. Shachter
*Assistant Professors:* Michael R. Carrasco, Julie A. Mueller, Ram Subramaniam
*Senior Lecturer:* Steven L. Fedder
*Fletcher Jones Professor:* Patrick E. Hoggard
*Clare Boothe Luce Professor:* Julie A. Mueller

The Department of Chemistry offers three baccalaureate degrees. The Bachelor of Science in Chemistry program prepares students for further work in chemistry, either in graduate school or as professional chemists. This program is approved and certified by the American Chemical Society. The Bachelor of Science with a major in chemistry prepares students for a career in medicine, dentistry, law, chemical engineering, business, teaching, or related fields. The Bachelor of Arts in Chemistry also prepares students for a variety of careers, but in the context of a liberal arts program with chemistry at its core. Each of these specialties requires different supporting courses. Suggested curricula have been prepared by the department. A minor in chemistry is also available.

## REQUIREMENTS FOR THE MAJOR AND MINOR

Students majoring in chemistry must complete the University Core Curriculum and College requirements for the Bachelor of Science or the Bachelor of Arts. In addition to these general requirements, the specific departmental programs for each degree are presented below.

### Bachelor of Science in Chemistry (Certified)

This four-year curriculum provides graduates with the background necessary to begin a career in chemistry at industrial and governmental laboratories or for admission to institutions offering advanced degrees in chemistry. The American Chemical Society certifies that this degree meets all its recommended professional standards for chemists.

1. Chemistry
   a. Lower-division core: CHEM 11, 12, 13, 14, 15, 31, 32, 33
   b. Upper-division core: CHEM 101, 111, 141, 151, 152, 153, 154
   c. Research methods: CHEM 183, 184
   d. Two upper-division electives
2. Supporting courses
   a. MATH 11, 12, 13 (MATH 21 recommended)
   b. PHYS 31, 32, 33

A certified biochemistry emphasis degree is available with these changes to the above: CHEM 142, 143, and one from BIOL 174, 175, or 176 instead of CHEM 101, 153; the two electives are limited to CHEM 101, 120, 130, 194; BIOL 21, 24, and 25 are required.

## Bachelor of Science in Chemistry

This four-year program provides a liberal scientific degree suitable for those planning careers associated with chemistry, including health-related sciences, environmental or patent law, business, and others.

1. Chemistry
   a. Lower-division core: CHEM 11, 12, 13, 14, 15, 31, 32, 33
   b. Upper-division core: CHEM 111, 141, 151, 152, 154
   c. Four additional upper-division courses as follows depending on the desired emphasis:
      i. Standard program
         (1) One from CHEM 123, 143, 182
         (2) Four from CHEM 101, 120, 130, 142, 153, 183, 184, 191, 192, 193, 194
         (3) Selections must be made such that a minimum of 60 hours of laboratory are included. CHEM 182 may be used to contribute 30 laboratory hours only. CHEM 143 or CHEM 123 also will satisfy this lab requirement.
      ii. Biochemistry/organic emphasis
         (1) CHEM 142 and 143
         (2) Three upper-division chemistry courses; BIOL 174, 175, or 176 may be taken to satisfy one of these courses
2. Supporting Courses
   a. MATH 11, 12, 13
   b. PHYS 31, 32, 33; or PHYS 11, 12, 13 and MATH 21

## Bachelor of Arts in Chemistry

This four-year course of study allows students the most freedom in choosing electives, especially in areas other than science. It is designed for students with a strong interest in the liberal arts. It is also an excellent program for pre-medical or pre-teaching students.

1. Chemistry
   a. Lower-division core: CHEM 11, 12, 13, 14, 15, 31, 32, 33
   b. Upper-division core: CHEM 111, 141, 151, 152, 154
   c. One additional upper-division chemistry elective
   d. Research methods: one unit of CHEM 199
2. Supporting courses
   a. MATH 11, 12, 13
   b. PHYS 31, 32, 33; or PHYS 11, 12, 13

## Minor in Chemistry

The minor in chemistry requires completion of CHEM 11, 12, 13, 31, 32, and 33 and two upper-division courses. Thirty hours of upper-division laboratory experience are required either through coursework or research with a chemistry faculty member.

## STUDENT RESEARCH OPPORTUNITIES

Research in the department is currently funded by the National Science Foundation, Howard Hughes Medical Institute, American Chemical Society Petroleum Research Fund, and Research Corporation. Majors in chemistry, biology, and combined sciences participate in faculty research projects through CHEM 182, 183, and 184. In addition, advanced students have opportunities for part-time employment assisting faculty in laboratory and related teaching activities.

## STUDY ABROAD

The chemistry curriculum is designed to allow students to study abroad during fall quarter of the senior year.

## PREPARATION IN CHEMISTRY FOR ADMISSION TO TEACHER TRAINING CREDENTIAL PROGRAMS

*Coordinator:* Steven L. Fedder

The State of California requires that students seeking a credential to teach chemistry in California secondary schools either pass a subject area examination or successfully complete a state-approved Subject-Matter Preparation Program in the sciences. The Department of Chemistry offers a state-approved program with a chemistry concentration that satisfies the subject-matter competency requirement for teaching chemistry at the secondary level. The science subject-matter program with a chemistry concentration satisfies the requirements for a Bachelor of Arts degree in Chemistry but includes some specific additional courses many of which also meet University and College Core requirements. These include:

1. Introductory biology sequence: BIOL 21, 22, 23, 24, 25
2. Introduction to Earth Sciences (PHYS 9) and Geology (CENG 20)
3. Introduction to Secondary School Teaching: Practicum (EDUC 98B/198B) and Introduction to Teaching in a Multicultural Society (EDUC 163)
4. One from the following: Philosophy and Science (PHIL 140), Issues in Theology and Science (TESP 151), Religion, Science, and the Environment (TESP 173)
5. One ethics course from the following: Technological Ethics (ENGR 19), Ethical Issues in Medicine (PHIL 7), Ethics and the Environment (PHIL 9), or Science, Technology, and Ethics (PHIL 117)
6. One course on the U.S. Constitution from: Colonies and Constitution (HIST 7), United States: The 19th Century (HIST 8), or Revolution, Confederation, Constitution (HIST 170)
7. One visual and performing arts course: Public Speaking (COMM 20)
8. Upper-division chemistry electives: Nuclear and Radiochemistry (CHEM 192) and one from the following: Biochemistry (CHEM 141), Advanced Organic Synthesis (CHEM 130), or Physical Chemistry III (CHEM 153)

In addition, students must complete related fieldwork and an individual portfolio to be reviewed by the single subject matter program coordinator. Because the requirements are very specific, students who are contemplating secondary teaching should consult with the coordinator in the Department of Chemistry as soon as possible. The secondary teaching credential additionally requires the completion of an approved credential program which can be completed as a fifth year of study and student teaching or through an undergraduate summer program and internship.

## LOWER-DIVISION COURSES

*Note: A laboratory fee is required for each laboratory course. In addition, breakage charges will be assessed after each course has been completed.*

### *1. Chemistry and the Environment*

Basic chemical concepts related to environmental issues such as global warming, acid rain, ozone depletion, waste and resource management. For the nonscience student. Laboratory. (4 units) NCX†

### *2. Chemistry in the Modern World*

Various applications of chemistry in today's world. Possible course offerings include Chemistry in Modern Society, Chemistry in the Natural World, Chemistry and the Health Sciences, Chemical Origins of Life, Understanding Hazardous Materials, Geochemistry, and perhaps others that may be offered occasionally. For the nonscience student. Laboratory. (4 units) NCX†

### *3. Chemistry in the Ancient World*

Chemical materials and processes developed up to ca. A.D. 400, from a modern chemical perspective; includes smelting, soap, dyes, pigments, glass, and pottery. For the nonscience student. Laboratory. (4 units) NCX†

### *4. Everyday Organic Chemistry*

Exploration of basic chemical concepts and their application toward the study of the myriad organic molecules that make up our lives. Emphasis on a molecular understanding of proteins, carbohydrates, DNA, and common pharmaceuticals, including discussion of the related practical, ethical, and political issues. For the nonscience student. Laboratory. (4 units) NCX†

### *7. The Science of War*

Upon completion of the course, each student should have an understanding of how conventional, chemical, biological, and nuclear weapons work and the potential long-term impacts on humans and the environment. (4 units)

### *8. An Organic View of the World*

Exploration of basic chemical concepts and their application toward the study of the myriad organic molecules that make up our lives. Emphasis on a molecular understanding of proteins, carbohydrates, DNA, and common pharmaceuticals, including discussion of the related practical, ethical, and political issues. For the nonscience student. (4 units)

### *11. General Chemistry I*

Measurement. Dimensional analysis. Inorganic nomenclature. Atomic structure. Periodic properties and the periodic table. Chemical bonding. Molecular structure. Chemical equations (combustion, acid/base, and oxidation/reduction) and stoichiometric relationships. Thermochemistry. Laboratory 3 hrs/wk. *Prerequisites: High school chemistry, physics, algebra, geometry, and trigonometry.* (5 units) NCX†

† Exempted from challenge

### *12. General Chemistry II*

Properties of solids, liquids, gases and solutions. Modern materials. Chemical kinetics. Chemical equilibrium. Electrochemistry. Selected topics in descriptive and applied chemistry. Laboratory 3 hrs/wk. *Prerequisite: CHEM 11 with a grade of C– or better.* (5 units) NCX†

### *13. General Chemistry III*

Aqueous equilibrium: acids, bases, salts, sparingly soluble ionic compounds. Basis of acid/base, oxidation/reduction, precipitation, potentiometric and spectrophotometric analysis. Chemical Thermodynamics. Nonmetal chemistry. Metallurgy. Organic and biochemical basics. Laboratory 3 hrs/wk. *Prerequisite: CHEM 12 with a grade of C– or better.* (5 units) NCX†

### *14. Inorganic Chemistry*

Detailed description of the chemical properties of the representative metals, transition metals, nonmetals, and noble gases. Crystal structure. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 13 with a grade of C– or better.* (5 units) NCX†

### *15. Introduction to Research*

This course introduces chemistry majors to undergraduate research in the department. Faculty present synopses of their individual research programs and overviews of modern fields of chemical research. Introduction to the chemical literature. The course is designed for sophomores, but interested freshmen are welcome to enroll. (1 unit)

### *30. Environmental Applications in Organic Chemistry*

A broad overview of organic chemistry with special emphasis on environmental applications, including ozone depletion, groundwater pollution, petroleum resources, and pesticide use. Viewed on a foundation of the naming, properties, and reactivity of families of organic compounds. For nonmajors who do not plan to take additional organic chemistry courses. Laboratory 3 hrs/wk. Not offered each year. *Prerequisite: CHEM 11 or permission of instructor.* (5 units) NCX†

### *31. Organic Chemistry I*

Basic concepts of bonding and structure in organic compounds, stereochemistry. Nomenclature. Physical and chemical properties of alkanes, alkenes, alkynes, and alkyl halides. Introduction to reaction mechanisms. Laboratory 3 hrs/wk. *Prerequisite: CHEM 13 with a grade of C– or better.* (5 units) NCX†

### *32. Organic Chemistry II*

Details of nucleophilic substitution and elimination reactions. Spectroscopic methods of structure determination. Nature and reactions of aromatic compounds and other conjugated pi systems. Chemistry of ethers, epoxides, and alcohols. Laboratory 3 hrs/wk. *Prerequisite: CHEM 31 with a grade of C– or better.* (5 units) NCX†

### *33. Organic Chemistry III*

Aldehyde, ketone, amine, phenol, and carboxylic acid chemistry. Carbonyl condensation reactions. Carbohydrate, protein, and synthetic polymer chemistry. Special topics. Laboratory 3 hrs/wk. *Prerequisite: CHEM 32 with a grade of C– or better.* (5 units) NCX†

### *99. Independent Laboratory*

Primarily for transfer students to make up lower-division laboratory as needed for equivalency with CHEM 11, 12, 13, 14, 31,32, and/or 33. May be repeated for credit. 3 hrs/wk. *Prerequisite: Approval of department chair.* (1 unit) NCX†

† Exempted from challenge

## UPPER-DIVISION COURSES

*Note: A laboratory fee is required for each laboratory course. In addition, breakage charges will be assessed after each course has been completed.*

### *101. Advanced Inorganic Chemistry*

Aspects of atomic structure. Theories of chemical bonding and molecular geometry. Applications of symmetry and group theory. Coordination chemistry. Introduction to organometallic chemistry. Inorganic reactions and mechanisms. Laboratory 3 hrs/wk. *Prerequisite: CHEM 151.* (5 units) NCX†

### *111. Instrumental Methods of Analysis*

Principles and use of instruments. Basic spectroscopic methods: ultraviolet-visible, infrared, atomic absorption, nuclear magnetic resonance, and mass spectroscopies. Basic chromatographic methods: gas and high-performance liquid chromatography. Laboratory 3 hrs/wk. *Prerequisite: CHEM 153.* (5 units) NCX†

### *120. Computer Applications in Chemistry*

Computer techniques for problem solving in chemistry, including spreadsheets, MathCad, and programming. *Prerequisites: CHEM 13 and 33.* (5 units) NCX†

### *123. Project Lab*

Supervised group projects directly related to ongoing research in the laboratory of the faculty mentor(s). Laboratory 8 hrs/wk. *Prerequisite: CHEM 151.* (2 units)

### *130. Organic Syntheses*

Modern synthetic methods applied to the preparation of a varied assortment of compounds. Discussion of retrosynthetic concepts, including synthons and chirons, with emphasis on syntheses taken from the literature. *Prerequisite: CHEM 33.* (5 units) NCX†

### *141. Biochemistry I*

Chemical principles as applied to biomolecules. Protein structure, enzyme function and regulation, chemical models for enzymes. Carbohydrate structure and metabolism, biological redox. Lipid structure and membrane organization. *Prerequisite: CHEM 33.* (5 units) NCX†

### *142. Biochemistry II*

Continuation of 141. Metabolic pathways of carbohydrates, lipids, and amino acids. Nucleic acid structure and function. Protein synthesis and subcellular sorting. Membrane biochemistry and signal transduction; hormone action. *Prerequisite: CHEM 141.* (5 units) NCX†

### *143. Biochemical Techniques*

A laboratory course emphasizing fundamental theory and practice in biochemical laboratory techniques including preparation and handling of reagents; isolation, purification, and characterization of biomolecules; enzyme kinetics; spectrophotometric assays; electrophoretic and immunological techniques. Laboratory 6 hrs/wk. *Prerequisites: CHEM 13, 142 (may be taken concurrently), and either CHEM 151 or permission of instructor.* (2 units) NCX†

### *151. Physical Chemistry I*

Fundamentals of chemical thermodynamics: energy, entropy, and Gibbs free energy. Equilibrium. Kinetic theory of gases. Electrochemistry. *Prerequisites: CHEM 13 and 32, MATH 13, and PHYS 33 (may be taken concurrently) or 13.* (5 units) NCX†

† Exempted from challenge

### *152. Physical Chemistry II*

Fundamentals of chemical kinetics and reaction mechanisms. Introduction to quantum mechanics and spectroscopy: wave-functions and probability; rotational, vibrational, and electronic transitions. *Prerequisite: CHEM 151.* (5 units) NCX†

### *153. Physical Chemistry III*

Continued study of quantum mechanics and spectroscopy: atomic and molecular electronic structure, normal vibrations, magnetic resonance, lasers. *Prerequisite: CHEM 152; concurrent enrollment in CHEM 101 is strongly recommended.* (5 units) NCX†

### *154. Physical Chemistry Laboratory*

Experimental applications of thermodynamics, kinetics, spectroscopy, and other aspects of physical chemistry. Laboratory 8 hrs/wk. *Prerequisite: Must be enrolled in, or have completed, CHEM 152.* (2 units)

### *182. Undergraduate Research*

Execution of experimental or theoretical research. Three hrs/wk of work per unit of credit. Regular attendance at seminars. May be repeated for credit. *Prerequisite: Consent of instructor.* (1–3 units) NCX†

### *183. Senior Research Experience*

Individual research under the supervision of a faculty mentor, culminating in a comprehensive progress report. Laboratory at least 9 hrs/wk. *Prerequisite: Senior standing in chemistry.* (3 units)

### *184. Capstone Research Experience*

Continuation of individual research begun in CHEM 183 under the supervision of a faculty mentor, culminating in a thesis and oral presentation. Laboratory at least 9 hrs/wk. *Prerequisite: CHEM 183.* (3 units)

### *191. Special Topics in Organic Chemistry*

Advanced topics in selected areas of organic chemistry. Common offerings include:

#### *Physical Organic Chemistry*

Emphasis on methods of elucidating organic reaction mechanisms. Structure/reactivity relationships. Polar and free-radical mechanisms. Molecular orbital theory and its application to pericyclic and photochemical reactions. *Prerequisites: CHEM 33 and 151.* (5 units)

#### *Others*

Other topics may be offered occasionally. May be repeated for credit if topics differ. *Prerequisites depend on the specific offering.* (5 units) NCX†

### *192. Special Topics in Physical/Inorganic/Analytical Chemistry*

Advanced topics in selected areas of physical, inorganic, or analytical chemistry. Common offerings include:

#### *Photochemistry*

Principles governing chemical reactions driven by light. Apparatus, excited state processes, kinetics of photochemical reactions, organic photochemistry, inorganic photochemistry.

#### *Polymer Chemistry*

Introduction to chemistry of macromolecules. Emphasis on synthetic polymers. Step-growth and chain-growth mechanisms. Kinetics and thermodynamics of polymerization. Characterization, morphology, fabrication, and testing of polymers. *Prerequisites: CHEM 33 and 153.*

#### *Nuclear Chemistry and Radiochemistry*

Nuclear chemistry: nuclear structure, radioactive decay, nuclear reactions. Radiochemistry: interaction of radiation with matter, detectors, tracers in chemistry. *Prerequisites: CHEM 151, or PHYS 33 or 13, plus permission of instructor.*

#### *Others*

Other topics may be offered occasionally. May be repeated for credit if topics differ. *Prerequisites depend on the specific offering.* (5 units) NCX†

† Exempted from challenge

### *193. Special Topics in Environmental Chemistry*

Introduction to industrial applications in chemistry and to environmental concerns in less-developed countries (Trinidad and Tobago). Survey of petrochemicals, pesticides, and pharmaceuticals based on plants. (Also listed as ENVS 143.) *Prerequisite: CHEM 32 or permission of instructor.* (5 units) NCX†

### *194. Special Topics in Biochemistry, Bioorganic, or Bioinorganic Chemistry*

Advanced topics in selected areas of biochemistry, bioorganic, and bioinorganic chemistry. May be repeated for credit if topics differ. *Prerequisites depend on the specific offering.* (5 units)

### *199. Independent Study in Chemistry*

Detailed investigation and directed reading on advanced topics, under the close supervision of a faculty member. Permission of the dean, department chair, and instructor must be obtained before registration. May be repeated for credit. (1–5 units.) NCX†

## DEPARTMENT OF CLASSICS

*Professors:* William S. Greenwalt *(Chair)*, John R. Heath, William J. Prior (courtesy of Philosophy Department)
*Associate Professor:* Helen E. Moritz
*Assistant Professors:* Scott LaBarge, Michael McCarthy, S.J.
*Senior Lecturer:* John R. Dunlap

Classics in the broad sense is the study of all aspects of the life and culture of ancient Greece and Rome. The Classics Department offers courses that explore the most important areas of these ancient civilizations and their Mediterranean context: language (ancient Greek and Latin), literature, history, philosophy, mythology, religion, and art.

Most courses in the department are open to any interested student. Classics courses, such as Mythology, Classical Tragedy, Ancient Greek Religion, and Women in Antiquity, require no knowledge of an ancient language. Latin or Greek may be taken to satisfy the secondary language requirement. Because of the multidisciplinary nature of the field, classics provides an ideal liberal arts curriculum that is an excellent background for careers in many areas.

Majors and minors are available in several programs in the Department of Classics: Ancient Studies, Classical Studies, and Classical Languages and Literatures (Latin or Greek; there is also a major, but no minor, in Latin and Greek). Because course offerings in any one term are limited, students wishing a classics major are encouraged to plan their curriculum in consultation with a faculty advisor at the earliest possible date. To earn a major in any of the programs offered by the Classics Department, students must fulfill University Core Curriculum and College of Arts and Sciences requirements for the Bachelor of Arts (B.A.) degree in addition to the requirements stipulated below for the individual programs.

† Exempted from challenge

## ANCIENT STUDIES

This program offers students the opportunity to study, in a comprehensive and multidisciplinary fashion, the cultures of ancient Greece and Rome in the context of other civilizations that arose prior to A.D. 500 near the Mediterranean Sea. Through sources in translation (there is no classical language component to this program), the ancient studies major explores the development, cross-fertilization, and legacies of the sundry cultures of western Asia, northern Africa, and southern Europe, which together shaped many of the fundamental institutions and ideas of the modern world.

### Requirements for the Major and Minor in Ancient Studies

The major requires the following courses:

1. Five lower-division courses, distributed as follows:
   a. CLAS 60
   b. CLAS 61 or ENGL 11
   c. CLAS 62 or HIST 11
   d. Two additional lower-division courses from the following list (at least one of which must be ARTH 11, PHIL 11, or MUSC/THTR 11): ARTH 11; CLAS 65, 67, 68, 75; MUSC/THTR 11; PHIL 11; various courses in religious studies (consult with classics department chair)
2. Seven upper-division courses from the following list of approved courses. At least one course each must be taken from three of the four disciplinary perspectives, and three courses must be taken within one of these perspectives:
   a. Language and Literature: CLAS 141, 175, 181, 182, 184; ENGL 161
   b. Philosophy and Religious Studies: CLAS 112, 114, 119, 177; PHIL 131; various courses in religious studies (consult with classics department chair)
   c. Art History, Music/Theatre and Dance: ARTH 104, 106, 110; CLAS 181, 182
   d. History and Political Science: CLAS 108, 109, 110, 111, 176, 183, 185, 186, 187; HIST 107, 112; POLI 111
3. CLAS 198

The minor requires the following:

1. CLAS 60
2. CLAS 62 or HIST 11, and any one additional lower-division course of the student's choosing (see above, 1b and 1d)
3. Four upper-division courses of the student's choosing, with at least two coming from different perspectives as listed above

## CLASSICAL LANGUAGES AND LITERATURES

These programs emphasize the study of ancient languages and the literature surviving in those languages and are supported by courses in other aspects of ancient literature and civilization.

Majors who plan to do graduate work in classics should acquire at least a minimal familiarity with both Latin and Greek.

In addition to any lower-division courses in Latin or Greek that the student may require, majors must complete the following courses:

### Requirements for the Major and Minor

***Major in Latin or Greek*** Nine upper-division courses in the language of concentration and a senior project (CLAS 198).

Minors in either Latin or Greek require completion of 20 upper-division units in the language.

***Major in Latin and Greek*** Nine upper-division courses in the ancient languages, with at least six of these in a single language, and a Capstone project (CLAS 198). (Minors in either Latin or Greek require completion of 20 upper-division units in the language.)

Students in these programs are strongly encouraged to fulfill the Western Culture requirement with CLAS 61/ENGL 11and ENGL 12, 13.

### Recommended Electives

***Lower Division*** CLAS 65; CLAS 62 or HIST 11; PHIL 11; ARTH 11; CLAS 67 or CLAS 68

***Upper Division*** Literature and culture courses in the CLAS 170- and 180- series and history courses in CLAS 108–111

At least one course in Latin literature (120–139) and one course in Greek literature (150–169) are regularly offered each academic quarter. These courses are cycled in order to ensure majors the opportunity of studying the greatest number of major authors and genres without duplication during their program. Although each of the upper-division courses in Latin and Greek is ordinarily offered at least once in three or four years, listing in the *Undergraduate Bulletin* does not guarantee that a course will be offered in any given year.

## CLASSICAL STUDIES

For students interested in the bases of Western civilization, this program offers a broad curriculum in language, literature, history, philosophy, and art unified by a concentration on the classical periods in ancient Greece and Rome. Courses in Latin or Greek language and in classical literature (in the original or in translation) are its core, but the program emphasizes a comprehensive understanding of the foundations of Western culture rather than a single discipline.

## Requirements for the Major and Minor in Classical Studies

The major requires the following courses:

1. A minimum of five courses in Latin or Greek, which may include the elementary sequence. Students entering with prior study of Latin or Greek may substitute up to two courses in classical literature with advance approval of the department chair.
2. Additional lower-division requirements—four courses distributed as follows:
   a. CLAS 65
   b. CLAS 61/ENGL 11
   c. CLAS 62/HIST 11
   d. One courses from the following: CLAS 60, 67, 68, 75, PHIL 11, ARTH 11
3. Additional upper-division requirements—five courses, distributed as follows:
   a. Two courses in classical literature: at least one from CLAS 141, 175, 181, 182, 184; the other from these or from the CLAS 120-, 130-, 150-, and 160-series (upper-division Greek and Latin literature)
   b. Two courses in ancient history from CLAS 108, 109, 110, 111, 112, 114, 119, 176, 183
   c. One course in classical culture from CLAS 177, 178, 185, 186, 187; POLI 111; ARTH 104, 106, 110; PHIL 131
4. CLAS 198

The minor requires the following:

1. Fulfillment of the second language requirement for the Bachelor of Arts in Latin or Greek
2. CLAS 61 or ENGL 11
3. CLAS 62 or HIST 11 or one upper-division course in ancient history
4. Additional upper-division courses
   a. Two courses in classical literature, in the original or in translation
   b. One course in ancient literature, history, philosophy, or art

Students in the Classical Studies program are encouraged to fulfill the Western Culture requirement with CLAS 61/ENGL 11 and ENGL 12, 13

## PROFICIENCY EXAMINATIONS IN LATIN AND GREEK

Students may fulfill their foreign language core curriculum requirement by successfully completing a proficiency examination in Latin or Greek at the level required for their program of study. A fee is charged for this examination. Contact the department chair to make arrangements.

## LATIN

### *1. Elementary Latin I*

Introduction to vocabulary, forms, and grammar of classical Latin. Development of reading skills with supporting exercises in writing. No language laboratory. (4 units)

### *2. Elementary Latin II*

Continuation of Latin I. (4 units)

### *3. Elementary Latin III*

Completion of elementary Latin. (4 units)

### *31. Latin Grammar Review*

Rapid review of Latin grammar. Especially for students wishing to refresh their high school Latin. (4 units)

### *121. Caesar*

Representative selections from the Commentarii on the Gallic War and/or the *Bellum Civile.*Consideration of the adaptation of history to political ends. (5 units)

### *122. Catullus*

Lyric poems, short epigrams, and longer mythological poems by the late Republican poet of personal love and sophisticated society. (5 units)

### *123. Roman Comedy*

One or more plays by Plautus or Terence. Origins and nature of Roman comedy. (5 units)

### *124. Ovid*

Selections from the major works, which include love poems, *Amores*; a handbook for amatory success, *Ars Amatoria*; and the epic compendium of mythology, the *Metamorphoses*. (5 units)

### *125. Cicero: Philosophical Works*

Consideration of Cicero's eclectic philosophy through a careful reading of one or more of his philosophical dialogues (e.g., *De Amicitia, De Senectute*, or *The Dream of Scipio*). (5 units)

### *126. Cicero: Oratory and Rhetoric*

One or more exemplars of Cicero's rhetorical style (e.g., Catilinarian Orations, *Pro Archia*) or rhetorical theory (e.g., *De Oratore*). Consideration of rhetorical form, figures, and *topoi.* (5 units)

### *127. Vergil: Aeneid*

The epic poem on the effort of founding Rome and the cost of its greatness. Consideration of the traditional and innovative features of Vergil's epic style and purpose. Attention to epic meter. (5 units)

### *131. Vergil: Eclogues and Georgics*

Vergil's earlier works: pastoral poems set in an idealized landscape and the didactic poem on the agriculture and countryside of his native Italy. (5 units)

### *132. Horace*

Selections from the odes and epodes. Attention to the adaptation of Greek lyric forms and rhythms to the Latin language. (5 units)

### *133. Livy*

Selections from the *Ab Urbe Condita*—the history of Rome from its semimythical founding through monarchy, early Republic, and Punic Wars. (5 units)

### *134. Roman Satire*

Representative selections from among the works of Horace, Juvenal, and others. Origins and development of the satiric mode in Latin literature. (5 units)

### *135. Medieval Latin*

Major works of prose and poetry from the fourth century to the Renaissance. St. Augustine's Confessions; the histories of Gregory of Tours, Bede, and Einhard; Latin fables; popular songs such as the *Carmina Burana*; and the humanistic writings of Dante and Petrarch. (5 units)

### *137, 138. Special Topics: Poetry Special Topics: Prose*

Occasional courses in selected authors or genres for advanced students. Possible topics: Lucretius or elegy in poetry; Cicero's letters, Tacitus, or other Roman historians in prose. (5 units)

## GREEK

### *21. Elementary Greek I*

Introduction to vocabulary, forms, and grammar of Attic Greek. Development of reading skills with supporting exercises in writing. No language laboratory. (4 units)

### *22. Elementary Greek II*

Continuation of Greek I. (4 units)

### *23. Elementary Greek III*

Completion of Greek grammar. Introduction to reading Greek literature. (4 units)

### *105. Advanced Greek*

Selected aspects of Greek grammar in the context of reading excerpts from Greek prose and poetry. *Prerequisite: CLAS 23 or equivalent.* (5 units)

### *151. Lucian*

Selections from the author's satirical treatments of mythology, history, philosophy, and rhetoric (e.g., *Dialogues of the Dead*) and/or from the fantasy called *A True Story.* Lucian's place in the Second Sophistic. (5 units)

### *152. Homer: Odyssey*

Selected passages demonstrating the fusion of the heroic and the romantic in an epic of peacetime. Consideration of epic meter and conventions. (5 units)

### *153. Euripides*

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to Euripides' place in the history of tragedy. Metrical reading of dialogue. (5 units)

### *154. Herodotus*

Selections from the Persian Wars. Herodotus' achievements and limitations as the "Father of History." Peculiarities of the Ionic dialect. (5 units)

### *155. Plato*

Careful reading from one or more dialogues such as *Apology, Crito, Phaedo,* and *Republic.* Detailed study of dialogue mode of discourse; overview of Plato's philosophy. (5 units)

### *156. Greek New Testament*

Readings selected from the Koine Greek text of the New Testament with a concentration on the gospels, John, or the epistles. Close reading of the text with a view to theological implications of the vocabulary. Introduction to primary research tools. (5 units)

### *161. Homer: Iliad*

Selected passages illustrating the course and consequences of the wrath of Achilles and the nature of the hero. Consideration of epic meter and conventions. (5 units)

### *162, 163. Sophocles, Aeschylus*

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to the author's particular contributions to the development of the tragic form. Metrical reading of the text. (5 units)

### *164. Oratory*

Selections from a representative Greek orator such as Demosthenes or Lysias. Consideration of classical rhetorical forms and topoi. (5 units)

### *165. Lyric Poetry*

Fragments of Alcaeus, Archilochus, Sappho, Simonides, and others. Development of elegiac, iambic, and melic forms. (5 units)

### *167, 168. Special Topics: Poetry Special Topics: Prose*

Occasional courses in selected authors or genres for advanced students. Possible topics: Hesiod or Pindar in poetry, Thucydides or Xenophon in prose. (5 units)

## CLASSICS

*Note: Knowledge of an ancient language is not necessary for the following courses.*

### *60. Introduction to Ancient Studies*

An exploration of the nature of political and religious authority; that is, the relationship between the individual, the state, and the divine—in three different ancient civilizations. The primary "texts" for this investigation are the representative monuments of each culture: the pyramids of Egypt (particularly the Old Kingdom), the Temple of Solomon in Jerusalem in the united monarchy, and the Parthenon of 5th-century Athens. (4 units)

### *61. Western Culture: Literature I*

Also listed as ENGL 11. For course description see ENGL 11. (4 units)

### *62. Western Civilization: Ancient*

Also listed as HIST 11. For course description see HIST 11. (4 units)

### *65. Classical Mythology*

Principal gods and heroes of Greek and Roman antiquity: their stories, significance, and pictorial representations. Implications of myth in society and possible origins of myth. Important background for European and English literature. (4 units)

### *67. Ancient Greek Religion*

Consideration of the differing attitudes and expectations of polytheisms and monotheisms and of religious expression in the context of classical Greek cult and ritual. Readings are drawn from a wide variety of literary, historical, philosophical, and epigraphical texts. (Also listed as HIST 16.) (4 units)

### *68. Ancient Roman Religion*

Examination of religious practices, institutions, and beliefs of the ancient Romans. Special consideration of interconnections in Roman religiosity between the acts/beliefs of individuals and the concerns of the state. Concludes with philosophic mysticism, magic, mystery religions, and Christianity. (Also listed as HIST 17.) (4 units)

### *75. Classics in Cinema*

A survey of the classical world through selected dramatic films illustrating sequentially the cultural and political history of ancient Greece and Rome. Close viewings of popular films, with comparative reference to sources and practice in the techniques of film criticism. (4 units)

### *108. Ancient Greece*

A survey of Hellenic history from the Bronze Age to Alexander the Great. Emphasis on the rise and fall of the polis as an independent social, cultural, and political community. (Also listed as HIST 108.) (5 units)

### *109. The Hellenistic Age*

A cultural, social, and political review of Alexander the Great's conquests and their Hellenistic ramifications through the reign of Egypt's Cleopatra VII. (Also listed as HIST 109.) (5 units)

### *110. Roman Republic*

A political, military, social, and cultural review of the rise and fall of the most successful state the West has ever known. (Also listed as HIST 110.) (5 units)

### *111. Roman Empire*

A political, social, and cultural survey of the Roman Empire beginning with Augustus and tracing changes in Rome from the development of the Roman Empire as a world state to the development of Christianity as a world religion. (Also listed as HIST 111.) (5 units)

### *112. World of Augustine*

In his life and writings, St. Augustine marks the point of transition from the ancient to the medieval world. In this course, students will join Augustine on his personal odyssey in *The Confessions* culminating in his conversion to Christianity; while reading *City of God* and excerpts from other treatises, we will examine the three principal controversies to which Augustine directed his intellectual energy: the Manichaean, the Donatist, and the Pelagian. The course will include an overview of late antiquity: major figures, key movements, and decisive events amid the dissolution of the Western empire. (5 units)

### *114. Imperialism and Religion: Roman Britain*

This course will focus on Roman Britain in order to illustrate how imperialistic powers manipulate the religions of the peoples who come under their sway both to foster pacification in newly won territories and to redirect the political loyalties of new subjects. In order to do so, this course will compare and contrast the religious traditions of the Romans and the Celts and note how religious policy in Britain was not historically unique, cross-cultural comparisons will be made using the Spanish experience in the New World and Britain's in India. (Also listed as HIST 114.) (5 units)

### *119. History of Early Christianity*

This course will explore explanations for how and why the church evolved from a marginal Jewish apocalyptic sect in the tumultuous world of 1st-century Judaea to become the official religion of the previously pagan Roman Empire. In this course, you should develop a greater appreciation for the rich tapestry of religious, social, and political events during the Roman Empire which contributed to the rise of Christianity. (Also listed as HIST 128.) (5 units)

### *141. Love and Relationship in Classical Antiquity*

An examination of the many forms of loving and erotic relationships as they pertained to the Greek and Roman quest for the best human life. Readings in: Euripides, Sappho, Ovid, Plato, Aristotle, and many others from genres of poetry, essays, letters, tragedy, and philosophy. (5 units)

### *175, 176, 177, 178. Topics in Classical Literature, Ancient History, Ancient Philosophy, Classical Culture*

Occasional courses or seminars in specialized topics. Consult current course descriptions for details.

### *180. Classical Epic*

*The Iliad* and *Odyssey, Argonautica, and Aeneid* in translation. Characteristics and historical development of epic genre and epic hero. (5 units)

### *181. Classical Tragedy*

Representative works of the principal Greek tragic playwrights: Aeschylus, Sophocles, and Euripides. Features of the tragic genre, its origins, and the conventions of its performance. At the discretion of the instructor, may include satyr drama and/or the Roman tragedy of Seneca. (Also listed as ENGL 110 and THTR 181.) (5 units) NCX†

### *182. Classical Comedy*

An exploration of various styles of and approaches to humor in the ancient Greek and Roman world, chiefly as seen through the genres of satyr drama, Greek Old and New comedy, and Roman comedy. At the discretion of the instructor, may include satire, spoof literature, and invective. (Also listed as ENGL 111 and THTR 182.) (5 units) NCX†

† Exempted from challenge

### *183. Greek and Roman Historiography*

A survey of the origin and development of historical prose from Herodotus through Ammianus Marcellinus. Consideration of history as an artistic genre; special attention to the authors' various political and ideological purposes. (5 units)

### *184. Classical Mythology in the Western Tradition*

An exploration of some of the ways authors from the classical period through the 20th century have manipulated Greek myths for their own poetic and political purposes. Focus is on the legends surrounding the fall of Troy, with particular attention paid to the shifting character of perhaps the two most protean figures in Greek mythology, Odysseus and Helen. Texts include selections from Homer's *Iliad*, Virgil's *Aeneid*, and Dante's *Inferno*, and unexcerpted works by Homer, Sophocles, Euripides, Gorgias and Isocrates, Ovid, Seneca, Dictys and Dares, Shakespeare, Tennyson, Giraudoux, modern Greek poets, and the Coen Brothers (O Brother, Where Art Thou?). (Also listed as ENGL 187.) (5 units)

### *185. Women in Ancient Greece*

Investigation into the representation and the reality of women's lives in ancient Greece, from mythistoric times through the Hellenistic period, from the evidence of literature, history, philosophy, and religion, from legal and documentary texts, and from art. Significance of the status of and views about women in the ancient contexts and for modern times. (Also listed as ENGL 186A.) (5 units)

### *186. Women in Ancient Rome*

Investigation into the representation and the reality of women's lives in ancient Rome, from mythistoric times of the founding of Rome to the advent of Christianity, from the evidence of literature, history, philosophy, and religion, from legal and documentary texts, and from art. Significance of the status of and views about women in the ancient contexts and for modern times. (Also listed as ENGL 186B.) (5 units)

### *187. Family in Antiquity*

A survey of family social, economic, political, and religious roles in various ancient Greek states and in Republican and Imperial Rome. (Also listed as ENGL 186C and HIST 113.) (5 units)

### *198. Capstone Project*

Directed research project and paper for senior classics majors. (5 units)

### *199. Directed Reading/Research*

Individually designed programs of reading or research, in Latin, Greek, or classics (i.e., literature in translation or culture). Available to advanced students. Written permission of the instructor and department chair required in advance of registration. (5 units)

## PROGRAM IN COMBINED SCIENCES

*Director:* Steven L. Fedder (Chemistry)

The College of Arts and Sciences offers a Bachelor of Science in Combined Sciences for students who have an interdisciplinary interest in the sciences. This degree provides breadth of basic natural science training along with meaningful exposure to analytical frameworks used in the social sciences. The combined sciences major nourishes intellectual flexibility by fostering awareness of the multiplicity of forces that shape our world. This major offers good preparation for times of dramatic change by encouraging students to think about interconnections among processes other sciences may examine in isolation.

### REQUIREMENTS FOR THE MAJOR

Students must complete the University Core Curriculum and the general education requirements for natural science majors in the College of Arts and Sciences. Students must have a C average in the courses specified in their major. All courses in the major must be taken for a grade. (Pass/no pass options are not allowed for courses taken in a student's major.)

In addition to meeting the general education requirements of the University Core Curriculum and natural science majors in the College of Arts and Sciences, majors in combined sciences must take the following courses:

### Natural Science Foundations

1. MATH 11, 12
2. BIOL 21, 22, 24
3. Lab: BIOL 23 or BIOL 25
4. CHEM 11, 12, 13, 31, 32
5. PHYS 11, 12, 13 or PHYS 31, 32, 33

### Social Science Frameworks

6. ECON 5
7. Frameworks for Studying Societies: POLI 1 or SOCI 1
8. Comparing Societies: ANTH 3 or POLI 2
9. General Psychology/Social Psychology: PSYC 1 or PSYC 2 or PSYC 150 or SOCI 127
10. Population Trends: BIOL 187 or SOCI 138 or ECON 101
11. Organizations at Work: SOCI 165 or 172

### Upper-Division Focus Courses

12. A minimum of five other upper-division courses, two of which must be selected from the natural sciences (biology, chemistry, or physics)

Careful selection of upper-division elective courses is critical for students majoring in combined sciences. Selection of upper-division electives is made in consultation with the combined sciences director. When supplemented with the right combination of elective courses, the core of the combined sciences major offers excellent preparation for a number of professional and career paths. The director advises different packages of elective courses for students interested in several career paths, including: the healing professions (medical school, dentistry, etc.); science teaching (in primary and secondary schools); medical and science sales and marketing (such as pharmaceutical sales; science-related investigations (such as safety and environmental studies); health care services management; and scientific laboratory operations and management. Many combined sciences majors go directly into the job market after graduation, while others go immediately on to professional schools (for example, medical school, law school, and MBA programs).

## PREPARATION IN COMBINED SCIENCES FOR ADMISSION TO TEACHER TRAINING CREDENTIAL PROGRAMS

The State of California requires that students seeking a credential to teach science in California secondary schools either pass a subject area examination or successfully complete a state-approved Subject Matter Preparation Program (SMPP) in the sciences. The Program in Combined Sciences offers a state-approved program with either a biology, chemistry, or physics concentration that satisfies the subject matter competency requirement for teaching science at the secondary level. Students who take the required courses for a combined sciences major need to fulfill several additional requirements in order to complete the science SMPP. Careful, well-informed course selection will enable you to satisfy a number of these state certification requirements with classes taken to fulfill SCU's general education requirements. The requirements beyond those needed for a combined science major include:

1. Introduction to Earth Sciences (PHYS 9) and Geology (CENG 20)
2. Introduction to Secondary School Teaching: Practicum (EDUC 98B/198B) and Introduction to Teaching in a Multicultural Society (EDUC 163)
3. One from the following: Philosophy and Science (PHIL 140), Issues in Theology and Science (TESP 151), Religion, Science, and the Environment (TESP 173)
4. One ethics course from the following: Technological Ethics (ENGR 19), Ethical Issues in Medicine (PHIL 7), Ethics and the Environment (PHIL 9), or Science, Technology, and Ethics (PHIL 117)
5. One technology course from the following: Understanding Digital Technology (COEN 1), From Telegraph to the Internet (ELEN 10), Use of Computers in Chemistry (CHEM 120), Introduction to Computing and Applications (MATH 3) or Introduction to Computer Science (MATH 10)
6. One course on the U.S. Constitution from: Colonies and Constitution (HIST 7), United States: The 19th Century (HIST 8), or Revolution, Confederation, Constitution (HIST 170)
7. One visual and performing arts course: Public Speaking (COMM 20)
8. Upper-division electives in chemistry, biology, or physics to satisfy concentration requirements

In addition, students must complete related fieldwork and an individual portfolio to be reviewed by the single subject matter program coordinator. Because the requirements are very specific, students who are contemplating secondary teaching should consult with the director of the program in combined sciences as soon as possible. The secondary teaching credential additionally requires the completion of an approved credential program which can be completed as a fifth year of study and student teaching or through an undergraduate summer program and internship.

## DEPARTMENT OF COMMUNICATION

*Professors:* Don C. Dodson, Emile G. McAnany
*Associate Professors:* Christine M. Bachen, Stephen C. Lee *(Chair)*, Yahia Mahamdi, Thomas E. Shanks, Paul A. Soukup, S.J.
*Assistant Professors:* Laura Ellingson, Charles H. Raphael, Sunwolf, Michael Whalen
*Senior Lecturer:* John A. Privett, S.J.
*Walter E. Schmidt, S.J., Professor:* Emile G. McAnany

The Department of Communication offers a program of studies leading to a Bachelor of Arts in Communication. The major prepares students for various graduate and professional studies and for careers in the communication industry. An academic minor is also available.

The communication major focuses on the communication process in interpersonal, mass media, and computer-based contexts. It explores the theory, research methodologies, responsibilities, institutional structures, and effects of mass and interpersonal communication. The department gives special consideration to new and developing communication technologies.

The major also integrates theory with practice. It allows students to apply their knowledge of the communication process to the study and creation of communication products (speeches, television programs, newspaper stories, Web sites, etc.). Particular attention is given to developing students' concerns for ethics and the common good.

The communication curriculum provides nonmajors with the opportunity to acquire a critical understanding of the communication process and contemporary media, to improve oral and written skills, and to heighten visual awareness.

## REQUIREMENTS FOR THE MAJOR AND MINOR

Students are expected to complete University Core Curriculum and College requirements.

The major in communication requires the following courses:

1. Lower Division
   a. COMM 1
   b. COMM 2
   c. COMM 12
   d. COMM 20
   e. COMM 30 or COMM 31 (This course is the prerequisite to continue in the video production sequence.)
   f. COMM 40

2. Upper Division
   a. Two upper-division communication theory courses (signified by the letter "A" in the course number)
   b. One upper-division communication applied course (signified by the letter "B" in the course number)
   c. Two additional elective upper-division communication courses
   d. COMM 110
   e. COMM 111
   f. Capstone course (typically COMM 112)

The minor in communication requires the completion of six communication courses as follows:

1. Lower Division
   a. One to four lower-division courses
      i. Must include COMM 1 or COMM 2
2. Upper Division
   a. Two to five upper-division courses (minimum of two upper-division courses)

## ADVISING

Because the communication field requires students to have a broad liberal arts education, students work closely with a department faculty advisor to plan a cohesive academic program that combines courses in the Communication Department with courses in other departments. Often students complete a minor or take a number of courses in related disciplines such as marketing, theatre arts, psychology, or political science.

All students are encouraged to complete at least a year of serious work on one of the student-run campus media. Special credit practica for such work may be included in the student's academic program.

Additionally, all junior and senior students are encouraged to complete an internship at an off-campus media organization or other communication-related institution. The department maintains a list of potential internships that may be completed for credit as COMM 98 or 198.

## STUDY ABROAD

The Communication Department will accept no more than two study abroad courses total (lower-division, upper-division, or a combination) as counting toward completion of the communication department course requirements.

Courses taken abroad will be accepted on a case-by-case basis as completing specific communication lower-division requirements. Upper-division courses taken abroad will be accepted only as communication upper-division elective credit (Comm 199). Courses taken abroad will not be accepted as completing the required List A, List B, research methods, or Thesis/Capstone requirements.

Whenever possible the Chair of the department will determine equivalency credit based upon the course description in the literature from the foreign university. We reserve the right to require syllabi to determine equivalency credit.

## SCU DEBATE

One of the oldest forensic programs in continuous operation on the West Coast, SCU debate provides a challenging and rigorous co-curricular activity designed to develop public speaking skills, critical thinking, and public policy analysis. The program is open to all majors and years regardless of previous speech or debate experience. The schedule offers national level competition in both Policy Team Debate (NDT) and in Parliamentary Team Debate (NPDA) along with numerous on-campus activities related to competitive speech, including hosting two high school invitationals in December and April. Students may receive academic credit, and Policy Debate participants are eligible to apply for merit scholarships. Travel includes tournaments at numerous colleges in California and also regionally along the West Coast.

## LOWER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *1. Introduction to Interpersonal Communication*

An overview of the communication process, issues, and theories explaining behaviors in human relationships, with an emphasis on linking our perceptions, thoughts, and feelings to those of our communication partners. Topics typically include the power of language, nonverbal communication, deception, persuasive communication, gender differences in communication, small group communication, and intercultural communication. Arrupe Center participation required. (4 units)

### *2. Introduction to Mass Communication*

An examination of mass communication and society, focusing on media industries, the production of content, and audiences. Considers different types of media, theoretical perspectives related to the role of media in society, and ethical and regulatory issues pertaining to media practice. (4 units)

### *12. Technology and Communication*

Examination of the relationship between society and communication technology—past, present, and future. Hands-on introduction to the basic functions of the computer as a communication tool, programmable "thinker," data sorter and searcher, and number cruncher. (4 units)

### *20. Public Speaking*

This course is designed to provide students with basic theories and skills that are essential to effective public speaking. Topics include audience analysis, organization, persuasion, credibility, and delivery. Ideally, students should be able to apply these skills in a variety of public speaking situations, whether in future college courses or in nonacademic settings. Each student will also learn to analyze, criticize, and evaluate the speaking of others. (4 units)

### *30. Visual Communication*

An introduction to the basic grammar and principles of visual communication, integrating theory and practice. The theory part provides students with the tools needed to understand visual language and the role of image-based media in contemporary culture. The application part introduces students to the principles and processes of media production using still photography and computer imaging. In addition to attendance at class, all students are required to attend production labs. Lab fee required. (4 or 5 units)

### *31. Video Production I*

A course designed to introduce students to the basics of video production in both field and studio environments. Through a combination of lectures, labs, field exercises, and basic studio operations, students will learn the techniques, concepts and processes

involved in single camera and studio television production. In addition to attendance at class, all students are required to attend production labs. Lab fee required. (5 units)

### *40. News Gathering and Writing I*

Introduction to the theories and techniques of journalism with emphasis on news gathering and writing, including news values, ethics, objectivity, journalistic style, research skills, and interview techniques. Primary emphasis on writing for newspapers. Includes weekly lab. *Prerequisites: ENGL 1 and ENGL 2.* (4 units)

### *90. News Radio Practicum*

Students will plan, report, and produce news programming at KSCU, the University radio station. May be repeated for credit. (1 unit)

### *92. Yearbook Practicum*

A practicum for editors and principal staff members of the University's yearbook, *The Redwood.* Principles of photojournalism, magazine graphic design, and book production. *The Redwood* staff members assist in teaching skills of reporting, writing, production, and design. Class members meet once a week and are expected to spend at least three hours a week in yearbook work. This course may be repeated for credit. (1 unit)

### *93. Photojournalism Practicum*

A practicum for photo staff of *The Santa Clara* (newspaper) and *The Redwood* (yearbook). Shooting, processing, and printing regular assignments for student publications. Advisors are working photojournalists with diverse backgrounds. The class meets one hour a week to discuss photo techniques and review students' work. The course features regular guest speakers from Bay Area newspapers. Basic knowledge of photography and darkroom techniques required. This course may be repeated for credit. (1 unit)

### *94. Forensics Practicum*

Supervised activity in forensics. Includes competition in debate and various speaking events: persuasive, expository, extemporaneous, impromptu, and oral interpretation. Field trips required. This course may be repeated for credit. (1 unit)

### *95. Journalism Practicum*

A practicum for writers and editors of *The Santa Clara.* Class members review the student newspaper and offer practical advice and experience in journalism. *The Santa Clara* staff members assist in teaching skills of news, sports, and feature writing and reporting, and techniques of design and production. Requirements: Class members meet once a week and are expected to spend at least three hours a week in newspaper work. This course may be repeated for credit. (1 unit)

### *97. Communication Practicum*

A practicum for participation in department activities. Includes teaching assistants, crew members, actors, researchers, script writers, and others as approved by instructor. *Prerequisite: Permission of instructor or chair.* This course may be repeated for credit. (2–4 units)

### *98. Internship*

Students work an average of 10–20 hours per week at an approved communication-related internship site outside the University. Students must be available to meet as a group once a week to discuss and analyze their internship. Students write several papers and complete a minimum number of hours based on units awarded. Students will add this course with a permission number obtained at the first class session. *Prerequisite: Consent of instructor one week prior to start of the quarter.* This course may be repeated for credit. (4 units)

### *99. Directed Research/ Creative Project*

Students arrange to work with a faculty member for a directed reading in communication theory, research, ethics, etc. Creative projects may also be arranged in television, print, or another applied area. Written proposal, course meeting schedule, and readings must be approved by instructor and chair one week prior to registration. This course may be repeated for credit. (4 units)

## UPPER-DIVISION COURSES

*Note: Theory courses are designated with the letter "A" and application courses with the letter "B."*

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *100A. Advanced Interpersonal Communication*

Analysis of theories and research on the practice of communication in social and intimate relationships. Specific contexts studies will include families, romantic relationships, and same-sex or opposite-sex friendships, and communication in the workplace. Explores the development of relationships from initial encounters with strangers, increased intimacy, sustaining of relationships, as well as the deterioration or termination of relationships. Course is designed to allow students to increase understanding of the processes of interpersonal communication, become familiar with a variety of theoretical approaches to relationships, as well as offer specific skills and strategies for building more satisfying relationships. *Prerequisite: COMM 1.* (5 units)

### *102A. Persuasion*

Analysis and synthesis of current persuasion theory and research to understand how messages influence attitudes and behaviors. How are persuasive messages crafted and what impact do they have? Specific domains of persuasive communication will typically include: theories for altering attitudes and behaviors, the persuasion process, the use of persuasion in applied contexts (advertising, public relations, personal relationships, courtrooms, health care settings). *Prerequisite: Any one of the following: COMM 1, PSYC 10, PSYC 11, or SOCI 1.* (5 units)

### *103A. Communication and Conflict*

A review of theories, perspectives, and research on communication and conflict in various contexts (families, friendships, romances, business relationships). Specific topics will include getting what you want, saving face, realigning power imbalances, miscommunication, styles and tactics, negotiation, third-party interventions, and transforming conflicts. Development of communication skills for managing conflict productively in interpersonal, organizational, and intercultural contexts. *Prerequisite: Any one of the following: COMM 1, PSYC 10, PSYC 11, or SOCI 1.* (5 units)

### *104A. Group Communication*

Theory and research in group, organizational, and team settings. Specific topics will include problem-solving and decision-making processes, leadership styles, roles and deviant behavior in groups, managing meetings, the effects of diversity and gender in groups, promoting group creativity, and managing group conflicts. *Prerequisite: Any one of the following: COMM 1, PSYC 10, PSYC 11, or SOCI 1.* (5 units)

### *105B. Oral Narratives: The Art and Practice of Storytelling*

Development, interpretation, and performance by students of a variety of oral story formats. Students will select, prepare, and perform oral tales, incorporating a variety of creative delivery techniques for specific contexts (civic groups, schools, health care settings, festivals, campfires, organizations, clubs, or courtrooms). Includes theories about the effects of oral narratives on learning, imagination, language development, critical thinking skills, persuasion, and the transmission of cultural values and beliefs. (5 units)

### *106A. Health Communication*

This course explores how health and illness are experienced and communicated by individuals, organizations, and the media. We will examine the history of the U. S. medical establishment, the intersections of race, class, gender, age, and sexuality with communication in health care organizations, the cultural specificity of health beliefs, and the ways in which media messages influence perceptions of health and risk. *Prerequisite: COMM 1.* (5 units)

### *110. Quantitative Research Methods*

Introduction to communication as a sociological science and to methods for analyzing communication content, media audiences, and interpersonal communication practices. Includes overview of design, sampling, data analysis, and statistics. *Prerequisites: COMM 1 and COMM 2.* (5 units)

### *111. Qualitative Research Methods*

Provides students with an understanding of qualitative methods used in communication research on messages, contexts, and impacts. Explores qualitative methods such as audience ethnography, participant observation, focus groups, textual analysis, in-depth interviewing, and institutional analysis. Students do exercises on design and application of qualitative methods and analyze the data gathered. *Prerequisites: COMM 1 and COMM 2.* (5 units)

### *112. Senior Thesis*

This course leads students through a major communication research project from research question, literature review, and the gathering of data or observations to formal public presentations of findings. Approaches may be quantitative or qualitative; choice of topic is guided by a student's previous theoretical coursework. Applied Capstone alternative is an option for students who qualify. *Prerequisites: All lower-division courses required for communication majors plus COMM 110, COMM 111, and two upper-division communication theory (list A) courses.* (5 units)

### *120A. Public Discourse*

Drawing from rhetorical theory, cultural studies, and social science literature, the course considers the nature of public discourse in a particular area, such as how poverty, homelessness, and welfare are treated in mass media coverage. Examination of the factors that shape public discourse and how communication might be improved to serve the needs of a democratic society more effectively. (5 units)

### *121A. Minorities and the Media*

The theory and practice of minority media production, representation, and use. Examination of the classification of a group as a minority, how different groups historically have been marginalized in public representation, and how these images have been, and are being, challenged. Course requirements include research into specific public images, fieldwork, and a final class presentation. (5 units)

### *122A. Communication and Gender*

Explores gendered patterns of socialization, interaction, and language. The course goes beyond stereotyping female and male modes of communicating to consider ways in which masculinity, femininity, ethnicity, class, age, sexuality, and disability intersect in interpersonal, family, organizational, and public communication, as well as in feminist and men's movements. (5 units)

### *123A. Media and Youth*

Young people spend more time watching television than any other activity except sleeping. This course examines the media culture that has become the culture of childhood. Students look at the content of popular media, use patterns, and effects in areas such as violence, stereotyping, and cognitive growth. Students conduct some original research on children or adolescents' media use. (5 units)

### *124B. Information Campaigns*

Examines the principles of design, implementation, and evaluation of information campaigns created to produce social change in such areas as health, drinking and driving, or recycling. Emphasized are problem analysis, audience analysis, and message design. Students look at actual campaigns (e.g., anti-smoking efforts or "Just Say No") and design their own campaigns focusing on a relevant social problem in the Bay Area. (5 units)

### *125A. Media Audience Studies*

The audience plays a critical role in our understanding of media. How do media scholars and practitioners conceptualize and study media audiences? How do individuals and groups use media, interpret media messages, and integrate media experiences into their lives? The course will address these questions, looking at a variety of media and media content (e.g., news and entertainment content of books, film, TV, Internet) and do so with different characteristics of audiences in mind. We shall see, for example, how audience responses are shaped by factors such as ethnicity, gender, age, or by the context in which the medium and its message are experienced. (5 units)

### *126A. Critical Media Theory*

A survey course to introduce major theoretical approaches used to study media. The goal is to provide students with the philosophical and historical background and theoretical concepts needed to analyze the institutions, forms, and content of the media from a critical perspective. (5 units)

### *127A. Intercultural Communication*

An analysis and comparison of communication styles and forms within and among cultural groups in the United States. Particular attention given to the communicative behavior of co-cultures such as Blacks, Asians, Chicanos, gays, women, the aging, and disabled. An examination of differences in communicative forms, content, and defensive behavior. The significance of such differences in style/behavior as the result of increasing contacts between cultures/co-cultures. (5 units)

### *130B. Screenwriting*

Creation of proposals, drafts, and final scripts for dramatic fictional narratives. Analysis of published short screenplays, and how the translation of these scripts to the screen affects the story. (5 units)

### *131B. Intermediate Video Field Production*

Advanced principles and techniques of television production. Advanced television aesthetics and narrative design, working with performers, and directing various formats. Advanced camera operation/videography, editing, and digital video effects are also explored. All students are required to attend a production lab. Lab fee required. *Prerequisite: COMM 30 taken prior to Fall 2000, or COMM 31 taken Fall 2000 or later.* (5 units)

### *132B. Advanced Documentary Production*

Explores the technical, aesthetic, and ethical issues surrounding documentary production. The documentary form is examined as a cultural and historical artifact, as a site where traditional expectations about journalism and personal expression collide. While emphasis is placed upon single-camera, film-style documentary production, other documentary styles are also examined. Clearances, copyright, and other fundamental production issues are explored. Students produce a 20- to 30-minute documentary for the course. All students are required to attend a production lab and outside film/video screenings. Lab fee required. *Prerequisite: COMM 131B.* (5 units)

### *134B. Advanced Studio Production*

Multiple-camera, studio-based video production. Dramatic production, music, and news/public affairs production styles are examined. Students produce 20- to 30-minute productions for the course. Digital video effects, still store, character generator, advanced audio, and remote location production elements are explored. All students are required to attend a production lab and outside film/video screenings. Lab fee required. *Prerequisite: COMM 30 taken prior to Fall 2000, or COMM 31 taken Fall 2000 or later.* (5 units)

### *135B. Film Style Narrative*

This course examines the single-camera, film-style narrative production. In preparation for their own 20- to 30-minute production, students examine film and video narrative design, the competing modes of production that have historically informed film-style visual production, and the economic constraints that inevitably influence creative vision. Clearances, copyright, and other fundamental production issues are explored. All students are required to attend a production lab and outside film/video screenings. Lab fee required. *Prerequisite: COMM 131B.* (5 units)

### *136A. Film/Video Narrative Strategies*

Why do movies and television shows look and sound the way they do? Why do we tell stories in these media in these ways? This course examines the historical roots and broad cultural implications of telling stories by moving pictures. Film/television theory and criticism is used as a means of examining our assumptions and preconceived notions about visual narrative styles. All students are required to attend outside film/video screenings. (5 units)

### *137A. Film/TV History*

Explores the development of the film and television industries, styles, and audiences. The impact of the forms is examined in the context of political, economic, and cultural changes of the past century. All students are required to attend outside film/video screenings. May be repeated as topics vary. (5 units)

### *138A. Popular Culture Studies*

Examines a broad array of historical and emerging popular culture forms. Drawing on communication, anthropology, and historical approaches to cultural production, the course examines the implications and effects of popular culture forms such as comic books, video games, and interactive media. May be repeated as topics vary. All students are required to attend outside film/video screenings. (5 units)

### *141B. Advanced News Writing and Reporting*

Emphasis on strategies for public affairs reporting, beat coverage, media ethics, and source development. Includes in-depth reporting project and feature assignments. Arrupe Center participation required. *Prerequisite: COMM 40.* (5 units)

### *143B. Special Topics in Journalism*

Sports, features, lifestyle, science, editorial writing, etc. Course focus shifts with instructor and topics change each quarter. May be repeated as topics vary. *Prerequisites: COMM 40 and COMM 141B, or consent of instructor.* (5 units)

### *144B. Broadcast Journalism*

Students learn how to research, write, shoot, edit, and report radio and television news. Ethics and law are also considered. Students complete three short news packages and one 12-minute mini-documentary. Students are also required to spend two days in a newscast simulation. Lab fee required. *Prerequisites: COMM 30 taken prior to Fall 2000, or COMM 031 taken Fall 2000 or later, and COMM 40.* (5 units)

### *145B. Edit and Layout for Print and Web*

Fundamentals of copy editing and designing print presentation formats. Emphasis on concise, logical, explanatory, and attention-getting presentation of words, graphics, and photographs. *Prerequisites: COMM 12 and COMM 40.* (5 units)

### *146B. Advanced Freelance Writing and Reporting*

The most in-depth journalism course. Includes story development, long-form journalism, investigative reporting techniques, and sophisticated writing approaches for newspapers and magazines. Students learn survival strategies for freelance writing. *Prerequisites: COMM 40 and COMM 141B.* (5 units)

### *147A. History/Theory of News*

Introduction to the history of mass media news in the United States. Analysis of forces that shape journalism today and how to identify their influence in news reports. Theories of journalism's role in the democratic process. Ethical dilemmas posed by contemporary news. *Prerequisite: COMM 40 or consent of instructor.* (5 units)

### *150B. Public Relations and Corporate Communication*

Explores the theories and practices of public relations, a planned program to gain public approval for an organization through structured communication. In addition to studying theory, students will be involved in practical projects involving advocacy writing, effective planning, and objective evaluation. In the process, students will learn the function of public relations in the corporate environment. Ethics will also be considered. (5 units)

### *151A. Organizational Communication*

Examines the major communication and organizational theories that form a foundation for the study of organizational communication. Considers organizations as active systems, and the role and effect of communication in organizational functions, culture, structure, and characteristics. Carefully considers the role of communication professionals in organizations. *Prerequisite: COMM 150B or consent of instructor.* (5 units)

### *160A. Silicon Valley Communication Technologies*

History and theory of computer and digital technologies. Silicon Valley as a case study of the growth and social impact of the Information Age. Emphasis on the changing role of institutions (universities, government, corporations) that shape the development of communication technology. Attention to the Information Age's impact on the environment, workplace, and home. *Prerequisite: Core technology class, or consent of instructor.* (5 units)

### *161B. Communication Media and Technology in Education*

In North America, we tend to associate communication media with entertainment or business. This course explores alternative uses of communication, particularly as applied to education. Examines theory and practice in distance education (radio schools, satellite service), instructional television (ITFS in local schools), and interactive video computer-assisted education. Normal reading assignments and class lecture. Examination of current implementations of the technologies. Class project will consist of designing and implementing (as far as possible) some educational use of communication (for example, an instructional show or a Web application). (5 units)

### *162A. Communication Technology and Policy*

Current issues and debates over technology policy in the United States. Special attention to how new communication technologies raise issues of privacy, access, political and cultural diversity, and democratic participation. Evaluation of policy options, drawing on communication research and ethical reasoning. Examines regulation of video, voice, and data delivery through telephone, cable, wireless, broadcasting, and Internet. Concludes with a student policy conference. (5 units)

### *170A. Communication Law and Responsibility*

An introduction to Constitutional questions, statutes, and the common law regarding crimes, torts, and issues of restraint on communications. Specific constraints on the first amendment (for example, defamation, privacy, copyright, harm to the public) will be considered, as well as rights of reporters and other communicators, all in the context of shifting communication technologies. Cases assigned as readings are available online. Weekly one-page case briefs, mid-term, final exam, and a written argument to be defended orally before a panel of judges. (5 units)

### *172A. Communication Ethics*

This course will explore the application of ethical standards and virtues to real-world challenges facing communicators in interpersonal, organizational, and new media settings; theories and models of moral development and ethical communication leadership; development of moral sensitivity, judgment, commitment, and courage to be "at our best" in communication settings. Exploration of moral imagination, reflection styles, and ethical community/cultures by engaging students in the process of "doing ethics" and critical reflection in a community setting. Development of skills in perspective-taking, values/virtues identification, and applied ethical decision making. Case construction and other research methodologies to explore practical ways to build character, develop virtues, and remove stumbling blocks to ethical action. *Prerequisites: Completion of University Core ethics course and upper-division status.* (5 units)

### *175A. Communication and Theology*

Do the practices of communication have any consequences for theology? We know that St. Paul claims that "faith comes from hearing" and that Christian theology has taken communicative expression seriously throughout the centuries. This course will look at how theology has used communication, how it has evaluated communication, how communication contributes to theology, and how new communication technologies have a contemporary impact on theological and religious practices. Examines a variety of communication expressions (art, music, poetry, television programs, films, Web sites) as religious expressions; students will create their own theological expression using some contemporary medium. (5 units)

### *180A. Global Audiences*

Explores how the globalization of TV and Internet news and entertainment and film have impacted audiences in different cultures. Examines the available research and theory on audience exposure and impact from a cultural, values, and social perspective and how cultural and political movements and/or government policy grow in reaction to invasion of a culture's symbolic space by global media messages. *Prerequisites: COMM 1 and COMM 2, or consent of instructor.* (5 units)

### *181A. Global Media Industries*

Examination of how media industries have been transformed into global businesses and how technologies of distribution by cable, satellites, and the Internet have brought almost all people into a global symbolic space; theories of political economy and audience reception are applied. Exploration of how groups and governments have responded to the phenomenon and what they do to protect their cultural and political sovereignty. *Prerequisites: COMM 1 and COMM 2, or consent of instructor.* (5 units)

### *182A. Global News Issues*

Explores the changes that have taken place in news coverage on a global basis in the last decade, especially television and Internet news; how government policies of control of information have changed in reaction to new technologies of information distribution; and how internal politics may be affected by international media attention. *Prerequisites: COMM 1 and COMM 2, or consent of instructor.* (5 units)

### *190. News Radio Practicum*

A practicum in which students plan, report, and produce news programming at KSCU, the University radio station. May be repeated for credit. (1 unit)

### *191. Video Production Practicum*

Hands-on specialized skill modules exploring a variety of production equipment, including lighting, digital audio postproduction, graphics design, and art direction. *Prerequisite: COMM 131B.* (1 unit)

### *192. Yearbook Practicum*

Practicum for editors and principal staff members of the University's yearbook, *The Redwood*. Principles of photojournalism, magazine graphic design, and book production. *The Redwood* staff members assist in teaching skills of reporting, writing, production, and design. Class members meet once a week and are expected to spend at least three hours a week in yearbook work. (1 unit)

### *193. Photojournalism Practicum*

A practicum for photo staff of *The Santa Clara* (newspaper) and *The Redwood* (yearbook). Shooting, processing, and printing regular assignments for student publications. Advisors are working photojournalists with diverse backgrounds. The class meets one hour a week to discuss photo techniques and review students' work. The course features regular guest speakers from Bay Area newspapers. Basic knowledge of photography and darkroom techniques required. This course may be repeated for credit. (1 unit)

### *194. Forensics Practicum*

Supervised activity in forensics. Includes competition in debate and various speaking events: persuasive, expository, extemporaneous, impromptu speaking, and oral interpretation. Field trips required. (1 unit)

### *195. Journalism Practicum*

Practicum for writers and editors of *The Santa Clara*. Students review the student newspaper and offer practical advice and experience in journalism. *The Santa Clara* staff members assist in teaching skills of news, sports, and feature writing and reporting, and techniques of design and production. Requirements: Class members meet once a week and are expected to spend at least three hours a week in newspaper work. (1 unit)

### *196. Public Relations Practicum*

Practicum involving planning, promoting, and attending events concerning the field of public relations. Class members will work in conjunction with members of the public relation club, meet once a week, and are expected to attend a variety of public relations events (speakers, etc.) on campus. (2 units)

### *197. Communication Practicum*

Practicum for participants in department activities. Includes teaching assistants, crew members, actors, researchers, script writers, and others as approved by instructor. *Prerequisite: Permission of instructor or chair.* (2–5 units)

### *198. Internship*

Students work an average of 10–20 hours per week at an approved communication-related internship site outside the University. Students must be available to meet as a group once a week to discuss and analyze their internship. Students write several papers and complete minimum number of hours based on units awarded. Course may be taken twice for credit, but only once to satisfy a communication upper-division elective requirement. *Prerequisite: Consent of instructor one week prior to start of the quarter.* (5 units)

### *199. Directed Research/ Creative Project*

Students arrange to work with a faculty member for a directed reading in communication theory, research, ethics, etc. Creative projects may also be arranged in television, print, or another applied area. Written proposal, course meeting schedule, and readings must be approved by instructor and chair prior to registration. *Prerequisite: Written proposal must be approved by instructor and chair one week prior to registration.* (2–5 units)

## DEPARTMENT OF ECONOMICS

*Professors:* Mario L. Belotti, William F. Donnelly, S.J., Alexander J. Field, David Friedman, John M. Heineke, William A. Sundstrom, Thaddeus J. Whalen Jr.
*Associate Professors:* Gregory A. Baker, Henry Demmert, Linda Kamas, Michael Kevane, Daniel Klein, Helen Popper *(Chair)*, Thomas R. Russell
*Assistant Professors:* Kris J. Mitchener, Dongsoo Shin
*Lecturers:* Fred Foldvary, Hugh J. McAllister
*W. M. Keck Foundation Professor:* Mario L. Belotti
*Michel and Mary Orradre Professor:* Alexander J. Field

As one of the social sciences, economics studies how the choices we make as individuals—as consumers and producers, as savers and investors, as managers and employees, as citizens and voters—combine to determine how society uses its scarce resources to produce and distribute goods and services. This practical, useful discipline provides insights into such important issues as the determinants of wealth and poverty; of unemployment, inflation, and economic growth; of success and failure in the marketplace. The rigorous, systematic analysis that the study of economics brings to bear on these and other real-world issues provides excellent preparation for careers in both the private and the public sectors, as well as for graduate study in economics, business, public policy, and law. Economics graduates pursue varied careers in business, law, banking and finance, government service, education, and private consulting.

### REQUIREMENTS FOR THE MAJOR AND MINOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science Degree, majors in Economics in the College of Arts and Sciences must complete the following departmental requirements:

***Lower Division*** ECON 11, 12, and 13; MATH 11 and 12 or MATH 30 and 31; BUSN 40 and 41

***Upper Division*** ECON 114, 115, 162, 180, and four upper-division economics electives

The minor in Economics offered through the College of Arts and Sciences requires the following: ECON 11, 12, 13, 114, 115, and 180; two additional upper-division economics courses; and MATH 11 or 30.

### PREPARATION FOR GRADUATE STUDY

In addition to the standard requirements for graduation, students considering graduate study in economics (leading to an M.A. or Ph.D.) are strongly encouraged to meet with their advisor as early as possible to plan an appropriate course of study.

## LOWER-DIVISION COURSES

### *5. Introduction to Economics*

An overview of the market economy intended for non-economics majors and non-business students. Topics include: markets, pricing and resource allocation; the basics of international trade; inflation and unemployment; selected issues in economic policy. (4 units)

### *11. Markets and Prices*

The first course in the three-course sequence required of all business students and economics majors. Topics include supply, demand, and the coordinating role of prices in a market economy; comparative advantage as the basis for international trade. (4 units)

### *12. Firms and Industries*

Production, cost, and pricing decisions within the business firm; competition and monopoly; game theory and competitive strategy. *Prerequisite: ECON 11.* (4 units)

### *13. Macroeconomics*

Determinants of national income and product; inflation, unemployment, and business cycles; monetary and fiscal policies; international monetary and financial relations. *Prerequisites: ECON 11 and 12 or permission of instructor.* (4 units)

## UPPER-DIVISION COURSES

*Prerequisites: Unless otherwise noted, ECON 11, 12, and 13, or approval of the instructor are required for all upper-division courses.*

### *101. Resources, Food, and the Environment*

Exploration of relationship among food production, resource use, and the environment. Topics include biotechnology, the green revolution, resource depletion, environmental degradation, and food safety. (5 units)

### *110. Natural Resource Economics*

The economics of renewable and nonrenewable natural resources. Topics may include energy resources, minerals, fisheries, timber, endangered species, and biodiversity. (5 units)

### *114. Intermediate Microeconomic Theory*

Microeconomic theory and applications. Topics include consumer behavior, production costs, risk and uncertainty, game theory, welfare economics, and economics of information. *Additional prerequisite: MATH 11 or 30.* (5 units)

### *115. Aggregate Economic Theory*

Macro, or aggregative, aspects of the economy, emphasizing modern macroeconomic models for explaining the level of output, employment, and prices. (5 units)

### *116. History of Economic Thought*

Evolution of economic ideas and their influences on the development of economic practices. (5 units)

### *117. European Economic History*

Study of the preindustrial environment and industrial growth patterns of Western Europe. (5 units)

### *119. American Economic History*

Study of growth and institutional change in the U.S. economy since colonial times. Topics include early industrialization, the economics of slavery, and the rise of large business enterprises and labor unions. (5 units)

### *120. Economics of the Public Sector*

Microeconomic analysis of the role of government in the market economy. Supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process. (5 units)

### *122. Money and Banking*

Theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy. (5 units)

### *124. Industrial Organization*

Microanalysis of the structure, conduct, and performance of U.S. industry. *Additional prerequisite: ECON 114 or permission of instructor.* (5 units)

### *126. Economics and Law*

An economic analysis of law and legal institutions focusing on the common-law areas of property, contracts, and torts. (5 units)

### *127. Public Finance: Taxation*

Analysis of various tax policies and their effect on the economy. Individual income taxes, corporate income taxes, consumption taxes, payroll taxes, state and local taxes, and other alternative forms of taxation. (5 units)

### *128. Business Cycles and Forecasting*

Study of the nature and causes of economic instability in an industrial economy. (5 units)

### *129. Economic Development*

Analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries. (5 units)

### *130. Latin American Economic Development*

Examination of the economic development of Latin American countries, with particular emphasis on the relationships between economic growth and their social, political, and economic structures. (5 units)

### *134. African Economic Development*

Economic problems and development of sub-Saharan Africa with emphasis on the relationships among social, political, and economic factors. (5 units)

### *135. Gender Issues in the Developing World*

Explores the gendered nature of poverty in the developing world, with special focus on sub-Saharan Africa, using basic economic analysis. (5 units)

### *136. 20th-Century Economic History*

Focuses on the development of the U.S. economy during the 20th century. Topics include the causes and consequences of economic growth, the Great Depression, the rise of government regulation, the changing role of women in the workforce, and the increasing internationalization of markets during the postwar period. *Additional prerequisite: ECON 115 or permission of instructor.* (5 units)

### *137. World Economic History*

Development of western and non-western economies since the late 19th century. Topics include globalization and economic integration, convergence and divergence in economic growth across countries, international monetary systems, impact of alternative policies and institutional regimes on economic performance. (5 units)

### *150. Labor Economics*

Study of labor productivity, incomes, and employment and how these are affected by labor organizations and labor legislation. *Additional prerequisites: BUSN 41 and ECON 114.* (5 units)

### *155. Economics of Immigration*

Examines economic impacts of post-1965 immigration to the United States. Topics include determinants of the migration decision, extent of "assimilation" of immigrants into the U.S. educational system and economy, and economic impacts of immigration on natives. (5 units)

### *156. Real Estate Economics*

Economic analysis of real estate markets, including supply of and demand for land and improvements, legal aspects of real estate ownership and transactions, government regulation and taxation of real estate, and real estate markets in urban and regional economies. (5 units)

### *160. The Economics of Poverty and Inequality*

Examines theories and evidence regarding poverty and economic inequality in the United States. Evaluates alternative public policies aimed at combating poverty. (5 units)

### *162. Capstone: Economic Policy and Perspectives*

Application of economic analysis to contemporary policy issues. To be taken during senior year. Satisfies Capstone Course requirement for economics majors in the College of Arts and Sciences. *Additional prerequisites: ECON 114 and 115 or permission of instructor. Must have senior standing.* (5 units)

### *163. Ethics and Economic Thought*

Use of welfare economics to investigate the issues of distributive justice and market allocation. Topics include utilitarianism, Rawls' maximin principle, Nash fairness, and Arrow's impossibility theorem. *Additional prerequisite: ECON 114.* (5 units)

### *170. Mathematical Economics and Optimization*

Generalization and reformulation of many familiar micro- and macroeconomic models as mathematical systems. Focus on exploring the properties of these models using mathematical techniques. *Additional prerequisites: MATH 12 or 31, ECON 114 and 115, or permission of instructor.* (5 units)

### *171. Topics in Mathematical Economics*

Topics in mathematical microeconomics and macroeconomics at the discretion of the instructor. *Additional prerequisites: MATH 12 or 31, ECON 114 and 115, or permission of instructor.* (5 units)

### *172. Game Theory*

Study of multi-person decision problems. Topics include solution concepts for games, strategic behavior, commitment, cooperation, and incentives. Games of complete and incomplete information. Emphasis on applications to real-world economic behavior. *Prerequisites: ECON 114 and MATH 12 or 31.* (5 units)

### *173. Econometrics*

Statistical methods to analyze economic data. Estimation and hypothesis testing using multiple regression; time series and cross-section data. *Additional prerequisites: MATH 12 or 31, and BUSN 41.* (5 units)

### *180. International Economics*

Analysis of the theory of international trade, problems in balance-of-payments adjustments, and international economic policies. (5 units)

### *185. Economics of Technological Change*

The economic determinants and consequences of technological change. Topics include research and development, joint ventures, patents and other intellectual property, university-industry and government-industry collaboration, and the relationship between antitrust and other regulatory policies and technological advances. (5 units)

### *188. Economics Seminar*

Modern economic theories and problems. Satisfies Capstone Course requirement for economics majors in the College of Arts and Sciences. Admission by invitation only. (5 units)

### *197. Economics Colloquium*

Topics selected by instructor. Does not count as an upper-division elective toward the economics major. May be repeated once for credit. (2 units)

### *199. Independent Study*

## DEPARTMENT OF ENGLISH

*Professors Emeriti:* James P. Degnan, Francis X. Duggan, Christiaan T. Lievestro, Elizabeth J. Moran
*Professors:* Diane E. Dreher, Ronald T. Hansen, Richard H. Osberg
*Associate Professors:* Terry L. Beers, Phyllis R. Brown *(Chair)*, Michelle Burnham, Mary Judith Dunbar, Marilyn J. Edelstein, Eileen Razzari Elrod, Linda Garber, Jeanne Gunner, John C. Hawley, Charles T. Phipps, S.J., Frederick P. Tollini, S.J. (Courtesy of Theatre and Dance Department), Fred D. White
*Assistant Professors:* Juliana Chang, Theodore J. Rynes, S.J., Peter Taylor, Juan Velasco
*Senior Lecturers:* Simone J. Billings, Sherry Booth, Ann Brady, Susan Frisbie, Jill Goodman Gould, Claudia Mon Pere McIsaac, Cory Wade, Jeffrey L. Zorn
*Gerard Manley Hopkins, S.J., Professor:* Ronald T. Hansen

The Department of English affords students a thorough undergraduate education in the liberal arts centered on the history, theory, and aesthetics of literature and the art of writing. The knowledge and skills developed in English courses provide excellent preparation for careers in law, government, business, communications, and education, as well as for graduate study in literature or writing.

### REQUIREMENTS FOR THE MAJOR AND MINOR

In addition to University Core Curriculum requirements and requirements for the Bachelor of Arts degree, English majors must complete a total of 15 courses distributed according to the specifications below. English majors ordinarily fulfill their College writing requirements by taking ENGL 1, 2, and 20.

The Department of English offers its majors two programs: the Writing, Rhetoric, and Literature Program, which offers students opportunities to prepare for a variety of careers and post-graduate studies; and Preparation in English for Admission to Teaching Credential Programs for students interested in teaching English in California secondary schools.

**Two foundation courses:**

- ENGL 20 and ENGL 21, to be taken as early as possible after declaring the English major

**Five historically-grounded courses:**

- One medieval, one Renaissance and/or 17th-century, one Enlightenment and/or Restoration and/or 18th-century, one 19th-century course
- One additional historically-grounded course (i.e., a survey course, a 20th-century course, etc.)
- At least one course must be in British literature and at least one course must be in American literature
- At least two of these courses must be taken at the upper-division level

**One upper-division writing/rhetoric/language course:**

- May be a course in creative writing, professional writing, personal writing, public discourse, rhetoric and writing, linguistics, etc.

**One upper-division methodology/theory course:**

- May be a course in theory, theory and criticism, the history of criticism, research methods, or an "Approaches to Literature" course that would emphasize the use of a particular critical or theoretical lens (i.e., feminist, psychoanalytic, rhetorical, ecocritical, postcolonial, etc.) to interpret and understand literature

**Three-course specialization:**

- Specialization to be selected by student with approval from his/her advisor; (e.g. literary history, a literary period, genre, postcolonial/ multicultural, a national literature, gender and sexuality, theory, writing/rhetoric, creative writing, independent)
- One of these three courses may be taken outside of the department, with advisor's recommendation and chair's approval
- One of these courses may (but need not) be taken at the lower-division level
- Courses may include, if appropriate to one of these specialized areas, independent study courses, courses involving major authors, comparative literature courses, and courses in literature in translation

**Two electives:**

- One of these courses should be taken outside of the student's area of specialization
- Only one of these courses may be taken at the lower-division level

**One senior seminar (ENGL 188) or senior thesis:**

- Students wishing to fulfill this requirement through a senior thesis rather than a senior seminar must prepare a proposal to be approved by the student's advisor, director, and the department chair by the end of the student's junior year of study.

*15 total courses*

Students are required to consult with their advisors, and with quarterly departmental course listings, in order to determine whether a particular course offering meets one or more of the above requirements.

Although many courses fulfill more than one of these requirements, students may count each course only once (for example, if a particular course fulfills both the historically-grounded and specialization requirements, you may count it for either one of those, but not for both).

The only exception to the above rule is that one of the 15 courses must be in gender or sexuality studies, and another course must be in ethnic or global studies.

Students who wish to teach at the high school level and who are in the "credential waiver" program (see Preparation in English for Admission to Teaching Credential Programs) have additional requirements (including, for example, a course in Shakespeare and additional courses in American literature). These students must meet with the Credential program advisor in order to ensure that they are meeting these additional requirements. Students not formally in this program but open to a future possibility of high school teaching are advised to consider taking these courses and to consult with the program advisor.

Students considering applying to graduate school should ensure that their selected courses prepare them adequately for admissions requirements in their desired program or discipline of study (including, where needed, the GRE subject exam in English). These students should consult with the departmental and university graduate school advisors in addition to their own advisor.

The minor in English requires two foundation courses (ENGL 20 and 21) and five electives, four of which must be upper-division courses.

## THE CANTERBURY PROGRAM

Established in 1997 to support undergraduate research for English majors, the Canterbury Program provides resources for faculty-student collaboration, supporting student scholarship with the following competitive research and travel grants:

### Canterbury Scholars

In April of each year, a number of Canterbury Scholars will be nominated from among the junior class for research support. Scholars will work on their research during their senior year with the supervision or collaboration of an English department faculty sponsor.

### Canterbury Travel Grants

A limited number of grants are awarded to allow English majors to visit special collections and to travel to conferences to attend special sessions or to present papers.

## CREATIVE WRITING MINOR

The creative writing minor has requirements primarily in the English Department. For more information, see Other Programs of Study.

## PREPARATION IN ENGLISH FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

*Coordinator:* Jill Goodman Gould

The state of California requires that students seeking a credential to teach English in California secondary schools either pass a subject-area examination in English or complete the state-approved Subject-Matter Preparation Program in English. The teaching credential itself requires the completion of an approved credential program which can be completed as a fifth year with student teaching or through a summer program and internship in conjunction with the undergraduate preteaching program.

The English Department program for the state of California Subject-Matter Preparation Program in English is similar to the English major with some additions.

Course requirements are organized in three strands:

1. *Writing*
   a. ENGL 1, 2, and 180
   b. one from ENGL 128, 174, 175, 176 or 177
2. *Literature*
   a. ENGL 11, 20, and 21
   b. one upper- or lower-division ethnic literature course
   c. one upper-division Shakespeare course
   d. three upper-division American literature courses
   e. one historical British literature course, either upper- or lower-division
   f. one senior seminar or thesis course
3. *Linguistics And Oral Communication*
   a. ENGL 104 or EDUC 253
   b. ENGL 101 or 102
   c. COMM 20

All requirements for the English major must be met. A strongly recommended elective is EDUC 198B.

For further requirements and to express your interest in joining the program, please contact Professor Goodman.

*Note: Authors and topics listed in the following course descriptions are typical rather than definitive. They are not necessarily included in a specific course every time it is offered, and others not listed here may be included. Some courses are offered every year; all, ordinarily, are offered at least once every two years.*

## LOWER-DIVISION COURSES

### *1. Composition and Rhetoric*

Study and practice of academic discourse emphasizing rhetorical knowledge and the composing processes, with special focus on critical contexts for thinking, reading, and writing. Attention to the rhetorical relationship of writer, subject, purpose, and audience and the recursive nature of the writing process, including drafting, responding to feedback, and revising. (4 units) NCX†

### *2. Composition and Rhetoric II*

A continuation of Composition and Rhetoric I topics in critical thinking, reading, and writing with focus on increasingly complex rhetorical tasks, including attention to such issues as genre, multiple audiences and authorial voices, and collaborative work. *Prerequisites: ENGL 1* (4 units) NCX†

### *1H. Composition and Rhetoric I—Honors*

A course in which students work intensively on their writing as they study and analyze short works of nonfiction and fiction. Students write primarily expository prose, occasionally researched. (4 units)

### *2H. Composition and Rhetoric II—Honors*

A course in which students work intensively on their writing as they study and analyze long works of nonfiction and fiction. Students write both expository and argumentative prose and hone those skills pertinent to university research papers. *Prerequisite: ENGL IH.* (4 units)

### *11, 12, 13. Western Culture: Literature I, II, III*

Chronological surveys of Western civilization's canonical literary texts from Mesopotamia in the third millennium B.C.E. to the 20th century, these courses explore the historical, social, religious, and intellectual heritage of the West as it is expressed in literature. (ENGL 11 also listed as CLAS 61.) (4 units)

### *20. Introduction to Literary Study*

Introduction to the study of literature through critical reading, writing, analysis, and research. *Prerequisites: ENGL 1 and 2.* (4 units)

### *21. Introduction to Poetry*

Introduction to the study of poetry through critical reading, analysis, writing, and research. (4 units)

### *30. Studies in American Literature*

Selected authors, movements, genres in American literature. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: ENGL 1 and 2.* (4 units)

### *31, 32. Survey of American Literature I, II*

Historical survey of American literature from its beginnings to the present. (4 units)

### *35. African American Literature*

A survey of African American literature from the 19th century to the present day. Authors to include Chesnutt, Douglass, Hurston, Johnson, Phillips, Walker, Wilson, and Wright, among others. (4 units)

### *36. Chicano Literature*

Studies in the literary fusion of Spanish and Native American oral and written traditions. (4 units)

### *37. Native American Literature*

Introduction to the study of Native American oral and written traditions, including contemporary works. (4 units)

### *38. Asian American Literature*

Readings in the Asian American literature of the United States. (4 units)

† Exempted from challenge

### *39. Multicultural Literature of the United States*

Short stories, film, autobiography, and poetry from many cultural communities in the United States. (4 units)

### *41, 42, 43. Survey of English Literature I, II, III*

Chronological survey of English literature from Beowulf to the present. (4 units)

### *54. Shakespeare*

Readings in selected major plays. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: ENGL 1 and 2.* (4 units)

### *67. U. S. Gay and Lesbian Literature*

Development of gay and lesbian literature in the United States from the mid-19th century to the present. Texts may include novels, short stories, poetry, and drama. (4 units)

### *68. Literature and Women*

Introduction to the study of literature by and about women, with special attention to questions of gender in their social and historical contexts. (4 units)

### *69. Literature by Women Writers of Color*

A study of U.S. women of color writing in the context of their respective cultural and social histories. Analysis of the interplay of racial images. (4 units)

### *71. Fiction Writing*

Introduction to the writing of fiction. (4 units) NCX†

### *72. Poetry Writing*

Introduction to the writing of poetry. (4 units) NCX†

### *73. Nonfiction Writing*

Close attention to the varieties and techniques of essay writing, which may include reviews, opinion pieces, personal essays, and more analytical forms of nonfiction. Class activities include critiquing of drafts and analysis of published essays. *Prerequisites: ENGL 1 and 2.* (4 units)

### *74. Introduction to Writing for Children*

Beginning instruction in how to write and illustrate a book for children. (4 units)

### *76. Rhetoric for Professional Communicators*

Instruction and practice in the values, genres, and conventions of professional communication. Introduction to rhetorical theories that point to the questions that professional communicators address in the workplace. *Prerequisites: ENGL 1 and 2.* (4 units) NCX†

### *77. Writing in Electronic Environments*

Instruction in Web design, Internet communication, visual rhetorics, and rhetorical distinctions between electronic and written discourses. *Prerequisite: ENGL 1 and 2.* (4 units)

### *79. Literature, Writing, Culture*

Instruction and practice in writing critically about selected literary works. Topics vary from section to section. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: ENGL 1 and 2.* (4 units)

### *90. Literary Review Practicum*

For editors and staff of the *Santa Clara Review.* Students meet weekly with a faculty member to discuss criteria by which to judge submissions of poetry and prose, in order to improve the quality of the writing the *Review* publishes. Students are graded P/NP only. May be repeated for credit. (1 unit)

† Exempted from challenge

## UPPER-DIVISION COURSES

### *101. Linguistics*

General survey of the science of linguistics: phonology, morphology, syntax, grammar, and usage. (5 units)

### *102. Theories of Modern Grammar*

Analysis of the basic problems of describing grammatical structure: traditional, structural, and transformational-generative grammars. (5 units)

### *103. History of the English Language*

Origin, structure, and development of the English language. Special attention to the morphology and syntax of Old English. (5 units)

### *110. Classical Tragedy*

Also listed as CLAS 181 and THTR 181. For course description see CLAS 181. (5 units) NCX†

### *111. Classical Comedy*

Also listed as CLAS 182 and THTR 182. For course description see CLAS 182. (5 units) NCX†

### *112A. Topics in Theatre and Dance Prior to 1700*

Also listed as THTR 112. For course description see THTR 112. (5 units)

### *112B. Topics in Theatre and Drama After 1700*

Also listed as THTR 113. For course description see THTR 113. (5 units)

### *113. English Drama I*

Non-Shakespearean drama in England to 1660. Authors may include the Wakefield Master, Marlowe, Ford, Webster, Jonson. (Also listed as THTR 111) (5 units)

### *114. English Drama II*

Survey of English drama from 1660 to the present. Authors may include Dryden, Wycherley, Congreve, Sheridan, Shaw, Eliot, and selected contemporary playwrights. (Also listed as THTR 114.) (5 units)

### *116. Shakespeare's Tragedies*

An exploration of the great tragedies of Shakespeare's maturity: *Hamlet, Othello, Macbeth,* and *King Lear,* with special attention to the theatrical, religious, moral, gender, and political dimensions of Shakespeare's tragedies. (Also listed as THTR 116.) (5 units)

### *117. Shakespeare's Comedies*

An exploration of a selected number of Shakespeare's comedies from his early, middle, and late periods, with particular attention to the social and sexual roles of men and women. (Also listed as THTR 117.) (5 units)

### *118. Shakespeare's Histories*

An exploration of the personal and political worlds of Shakespeare's history plays, with attention to leadership and values in *Richard II, Richard III, Henry IV,* and *Henry V.* (Also listed as THTR 118.) (5 units)

### *119. Modern American Theatre History (1915–Present)*

Also listed as THTR 119. For course description see THTR 119. (5 units)

### *120. History of Film*

Introduction to key texts and concepts in the study of film, including prominent movements and figures in cinema, the language of film form, essential terms and concepts in film history and criticism, and the technological, economic, and institutional history of the film industry. (5 units)

### *121. Studies in American Film*

Study of selected American films. May focus on periods, movements, and issues such as surrealism in film, the American city in film, utopias and dystopias in film. (5 units)

### *122. Culture and Film*

Study of film through the lens of cultural criticism. (5 units)

† Exempted from challenge

### *123. History of Literary Criticism*

Examination of major issues, texts, and debates in literary criticism and theory, from classical times to the present. Authors may include Plato, Aristotle, Sidney, Kant, Wordsworth, Marx, Jung, Freud, Sontag, and Showalter. (5 units)

### *124. Contemporary Critical Theory*

Exploration of major movements in recent critical and literary theory, e.g. Marxism, feminism, deconstruction, postmodernism, reader response, new historicism, and cultural studies. (5 units)

### *125. Feminist Literary Theory and Criticism*

Study of 20th-century feminist literary theory and criticism. Examination of influences of gender on reading and writing literature. (5 units)

### *126. The Craft of Poetry*

Analysis and practice of image, line, diction, rhythm, rhyme, form, and other elements of the poet's craft. May be repeated for credit. *Prerequisite: ENGL 72.* (5 units)

### *127. The Craft of Fiction*

Analysis and practice in the technical aspects of fiction writing. May be repeated for credit. *Prerequisite: ENGL 71.* (5 units)

### *128. Reading and Writing Nonfiction*

Extensive practice in various types of nonfiction writing, combined with critical analysis of selected texts. Emphasis on critiquing and revising of drafts. Course may be organized around a theme, such as nature and environmental writing or writing about different cultures. May be repeated for credit. (5 units)

### *129. California Literature*

Literature written by Californians and/or about California. Authors may include Steinbeck, Jeffers, Ginsberg, Didion, and Snyder. (5 units)

### *130. Slavery and Mastery in the Literary Imagination*

This course focuses on the words of slaves and slave-owners, abolitionists, and the descendants of slaves. We will explore how the issue of slavery found its way into American literature and how language is used to make slaves of men and women or to make women and men of slaves. Authors to include Craft, Douglas, Equiano, Jacobs, Morrison, and Stowe among others. (5 units)

### *131. Studies in Early American Literature*

Study of selected works from the beginnings of American literary history up to the 19th century. Writers, genres, and topics vary each term. Works may include journals, poetry, slave narratives, sermons, letters, legends, autobiographies, essays, and early fiction. May focus on periods and issues such as the literature of cultural contact and European settlement, Puritanism, the Enlightenment, and the American Revolution. May be taken more than once when topics differ. (5 units)

### *132. Studies in 19th-Century American Literature*

Studies of selected American works from the 19th century. Writers, genres, and topics vary each term. May focus on periods, movements, and issues such as American romanticism, transcendentalism, realism and naturalism, regionalism, magazine writing, the rise of women writers, and literature of social protest (abolition and suffrage). May include fiction (short stories, novels, and sketches), plays, poetry, essays, slave narratives, and autobiographies. May be taken more than once when topics differ. (5 units)

### *133. Studies in Modern American Literature*

Study of selected American works from the early part of the 20th century. Writers and genres vary each term. May focus on periods, movements, and issues such as American expatriate literature, novels of social conscience, the modern poetic sequence, the Harlem Renaissance, modernism, magazine fiction, or regional poetry. Works may include fiction (short stories, novels, sketches), plays, poetry, essays, and autobiographies. May be taken more than once when topics differ. (5 units)

### *134. Studies in Contemporary American Literature*

Study of selected works by contemporary American writers. Writers, genres, and topics vary each term. May focus on periods, movements, and themes such as multiethnic literatures, contemporary women novelists, postmodernism, the Beat generation, literature and politics, literature of the 1960s, or experiments in poetic and narrative form. Genres may include poetry, novels, short stories, essays, plays, and/or autobiographies. May be taken more than once when topics differ. (5 units)

### *135. American Novel I*

The American novel before 1900. Authors may include Brown, Rowson, Cooper, Melville, Hawthorne, Stowe, Harper, Twain, Chopin, Crane, James, Wharton, and Chestnut. (5 units)

### *136. American Novel II*

The American novel in the 20th century. Authors may include Cather, Fitzgerald, Hemingway, Faulkner, Ellison, Barth, and other recent novelists. (5 units)

### *137. American Poetry I*

American poetry of the 17th, 18th, and 19th centuries. Authors may include Bradstreet, Taylor, Wheatley, Freneau, Emerson, Poe, Whitman, Dickinson, and Crane. (5 units)

### *138. American Poetry II*

American poetry of the modernist era. Authors may include Frost, Robinson, Eliot, Pound, Stevens, Williams, Jeffers, Moore, and Bishop. (5 units)

### *139. Special Topics in American Literature*

Advanced study of an issue, theme, or genre in American literature that crosses historical periods. Topics change each term. May be taken more than once when topics differ. (5 units)

### *140. Studies in Chicano Literature*

Studies in Chicano and Native American traditions. Authors may include Arteaga, Alarcon, Bruce-Novoa, Rebolledo, and Herrera-Sobek. (5 units)

### *141. Medieval Literature*

Medieval literature in its political, religious, historical, social, and cultural contexts. Typically works include medieval drama and lyric, *Sir Gawain, Pearl*, Langland, and Malory. (5 units)

### *142. Chaucer*

Study of *The Canterbury Tales* in the context of medieval literature and culture. Emphasis on Chaucer's language and style. (5 units)

### *143. Renaissance Literature*

The comparative literature of the Renaissance. Authors may include Pico della Mirandola, Castiglione, Machiavelli, More, Sidney, Spenser, Labé, de la Cruz, Colonna, and Shakespeare. (5 units)

### *144. The 17th Century*

The literature of England from 1603 to 1660. Authors may include Donne, Marvell, Bacon, Browne, Burton, Jonson, Herrick, and Herbert. (5 units)

### *145. Milton*

A study of Milton's major poetry and prose in the light of recent criticism. (5 units)

### *146. Neoclassical Literature*

The literature of England and Ireland from 1660 to 1798, excluding the novel. Authors may include Congreve, Dryden, Swift, Pope, Johnson, and Boswell. (5 units)

### *147. Romantic Movement*

The literature of England from 1798 to 1832. Authors may include Blake, Burns, Wordsworth, Coleridge, Byron, Shelley, and Keats. (5 units)

### *148. Victorian Literature*

The literature of England from 1833 to 1902. Authors may include Carlyle, the Brontés, Tennyson, the Brownings, Newman, Ruskin, Arnold, and Hopkins. (5 units)

### *149. Modern British Literature*

Twentieth-century poetry and prose. Authors may include Owen, Hardy, Conrad, Yeats, Joyce, Lawrence, Eliot, and Woolf. (5 units)

### *150. Contemporary Literature*

British and American poetry, fiction, and drama since World War II. Authors may include Cheever, Leavitt, Amis, Duong Thu Huong, Carey, and Kincaid. (5 units)

### *151. English Novel I*

The 18th-century English novel. Authors may include Defoe, Richardson, Smollett, Sterne, Fielding, and Austen. (5 units)

### *152. English Novel II*

The 19th-century English novel. Authors may include Scott, the Brontës, Dickens, Thackeray, Eliot, Meredith, Butler, and Hardy. (5 units)

### *155. Studies in Asian American Literature*

Study of selected works in Asian American literature. (5 units)

### *156. Studies in Gay and Lesbian Literature*

Interdisciplinary study of gay and lesbian cultures and critical theory. Topics vary each term, but course typically explores various ways in which sexual identity is articulated and understood. May focus on the United States, non-western cultures, or comparative study of cultures. May be taken more than once when topics differ. (5 units)

### *157. Commonwealth Literature*

Literature written with a postcolonial emphasis in English since 1945 in countries such as India, Pakistan, Kenya, Nigeria, Jamaica, Australia, Canada, and New Zealand. (5 units)

### *158. Studies in Native American Literature*

Study of selected works in Native American literature. Course may focus on particular authors (Leslie Marmon Silko, Louise Erdrich, James Welch), particular tribal or regional literatures, genres (autobiography, poetry, novel), or topics (trickster discourse, landscape, historical representation). (5 units)

### *160. Children's Literature*

Study of the theory and practice of children's literature with special attention to the history of children's literature, the debate over the kinds of texts best suited for teaching reading, and multiculturalism. (5 units)

### *161. The Bible as Literature*

Literary genres of the Bible (myth, history, wisdom, prophecy, gospel) studied in translations from the Hebrew and Greek against the background of Mesopotamian, Babylonian, Egyptian, Hellenistic, and Roman cultures. (5 units)

### *162. Comparative Humanism*

Comparative readings in early modern literature by men and women in the Western tradition, with special attention to issues of literacy, education, and humanistic attitudes. (5 units)

### *163. Readings in Comparative Literature*

Comparative readings in various chronological periods of Western literature, for example, medieval, romantic, modern, or contemporary. May be repeated for credit. (5 units)

### *164. Themes in Comparative Literature*

A comparative exploration of literary themes developed by men and women in the Western tradition, with special emphasis on changes in form, character, and myth over time. May be repeated for credit. (5 units)

### *165. African Literature*

Readings in the contemporary literature of Africa. (5 units)

### *166. Pan-African Literature*

Readings in the literature of the black diaspora. Writers from Africa, the Caribbean, and the United States. (5 units)

### *167. Modern Fiction*

Selected works of continental, English, and American fiction that are peculiarly modern in sensibility or style. Authors may include James, Proust, Joyce, Gide, Kafka, Mann, Woolf, Lowry, and Faulkner. (5 units)

### *168. Women and Literature*

Studies in literature by and about women. Authors, genres, historical periods, and themes change from year to year. May be repeated for credit by permission of department chair. (5 units)

### *169. Non-English Literature in Translation*

Non-English literature in translation. Areas and topics vary from year to year. (5 units)

### *170. Advanced Writing for Children*

Workshop in writing and illustrating children's books. (5 units)

### *171. Advanced Fiction Writing*

Writing fiction, with emphasis on the short story. May be repeated for credit. *Prerequisite: ENGL 71.* (5 units) NCX†

### *172. Advanced Poetry Writing*

Workshop in the writing of poetry. May be repeated for credit. *Prerequisite: ENGL 72.* (5 units) NCX†

### *173. Screenwriting*

An introduction to the fundamentals and format of screenplay writing. Critical analysis of characterization and narrative structure in contemporary movies, as well as workshops in the writing of film treatments, outlines, and scripts. May be repeated for credit. (Also listed as THTR 173.) *Prerequisites: ENGL 71 or permission of the instructor.* (5 units)

### *174. Advanced Nonfiction Writing*

Extensive practice in writing nonfiction, which may include articles, essays, interviews, and other forms of nonfiction. May be repeated for credit. (5 units)

### *175. Magazine Writing*

Continued practice in research and writing for popular magazine audiences, which may include writing reviews, profiles, and general interest articles. May be repeated for credit. *Prerequisite: ENGL 73 or permission of the instructor.* (5 units) NCX†

### *176. Advanced Academic Writing*

This course extends instruction in explanatory and exploratory writing principles introduced in prior courses. Activities include reading and intensive writing on a range of topics. Students conduct peer reading/revision groups and meet individually in conference with the instructor. A final project replaces a final exam. (5 units)

† Exempted from challenge

### *177. Argumentation*

Argumentative and persuasive writing, ideal for students planning careers in business, politics, or law. *Prerequisites: ENGL 1 and 2.* (5 units) NCX†

### *178. Technical Writing*

Instruction in the writing of formal reports, procedures, proposals, and journalistic pieces such as brochures and feature articles. Attention given to techniques of information gathering (including conducting interviews and surveys), document design, and editing. Open to students of all majors. Ideal for those planning careers in health care, the sciences, or industry. *Prerequisites: ENGL 1 and 2.* (5 units) NCX†

### *179. Business Writing*

Practice in the conventions of business writing. Emphasis on clear, concise memoranda, letters, and reports. *Prerequisites: ENGL 1 and 2.* (5 units) NCX†

### *180. Writing for Teachers*

Writing and the teaching of writing. Especially recommended for students planning careers in primary and secondary education. *Prerequisites: ENGL 1 and 2.* (5 units) NCX†

### *181. Writing for Publication*

Tutorial for serious writers from all disciplines, including sciences, business, and engineering. May be repeated for credit. Flexible scheduling. Enrollment by permission of the instructor. (5 units) NCX†

### *182. Introduction to Technical Writing for Engineers*

The basics of effective written technical communication, including problem analysis, audience analysis, document design, revision, and the design and use of graphics. Open only to junior and senior engineering majors. *Prerequisites: ENGL 1 and 2.* (4 units) NCX†

### *183. Writing for Business*

Designed to provide junior and senior business majors with a working knowledge of different styles of professional written communication. Stresses appropriate form, style, and content for both individual and committee/group work—from simple memos to more complex analyses—from short letters to lengthy reports. Most importantly, provides direct experience with "actual" business writing in a focused atmosphere of analysis and discussion. *Prerequisites: ENGL 1 and 2.* (5 units)

### *184. Special Topics*

Major authors, genres, literary movements, or themes. May be repeated for credit with permission of department chair. (5 units)

### *185. Grants, Proposals, and Reports*

Study of and practice in the professional writing of grants, proposals, and reports. Analysis of subject matter, length, purpose, information sources, number and kind of readers, and the circumstance that lead to preparation. *Prerequisites: ENGL 1 and 2.* (5 units)

### *186A. Women in Ancient Greece*

Also listed as CLAS 185. For course description see CLAS 185. (5 units)

### *186B. Women in Ancient Rome*

Also listed as CLAS 186. For course descriptions see CLAS 186. (5 units)

### *186C. Family in Antiquity*

Also listed as CLAS 187. For course description see CLAS 187. (5 units)

### *187. Classical Mythology in the Western Tradition*

Also listed as CLAS 184. For course description see CLAS 184. (5 units)

† Exempted from challenge

### *188. Senior Seminar*

Special topics in English, American, or comparative literature for senior English majors. Enrollment by permission of instructor. (5 units) NCX†

### *189. Honors Seminar*

Seminar for students in University Honors Program and other invited students. Since topics change from year to year, this course may be repeated for credit with permission of the department chair. (5 units) NCX†

### *190. Literary Review Practicum*

For editors and staff of the *Santa Clara Review.* Students meet weekly with a faculty member to discuss criteria by which to judge submissions of poetry and prose, in order to improve the quality of the writing the *Review* publishes. Students are graded P/NP only. May be repeated for credit. (1 unit)

### *191. Literature and Performance*

Also listed as THTR 160. For course description see THTR 160. (5 units)

### *192. American Theatre from Black Perspective*

Also listed as THTR 161. For course description see THTR 161. (5 units)

### *193. Playwriting*

Also listed as THTR 170. For course description see THTR 170. (5 units)

### *194. Advanced Playwriting*

Also listed as THTR 171. For course description see THTR 171. (5 units)

### *195. Dramaturgy*

Also listed as THTR 185. For course description see THTR 185. (5 units)

### *196. Writing in the Community*

In this class, fiction writers and poets facilitate creative writing workshops at placements and agencies served by the Arrupe Center. *Prerequisite: Permission of instructor.* (5 units)

### *197. Practicum in Tutoring Composition*

Training in the tutoring of writing. Open to students of all majors who have strong writing skills and who enjoy helping fellow students improve their work. Tutors are paired with freshman composition students, prepare reports of their tutorials, and write analytical papers about the tutoring experience. (5 units)

### *198. Writing Internship*

Work-study program for students of superior writing ability who gain course credit by supervised writing on newspapers, magazines, or for government or private agencies. Enrollment is by permission or invitation of the instructor and department chair. May be repeated once for credit. Students are graded P/NP only. (5 units) NCX†

### *199. Directed Reading/ Directed Research*

In special circumstances and with permission of the department chair, a student may request a course in directed reading or writing from an instructor. May not be taken in a subject listed in this bulletin. (5 units) NCX†

† Exempted from challenge

## ENVIRONMENTAL STUDIES INSTITUTE

*Executive Director:* Amy Shachter
*Director of Campus and Community Programs:* Shana Weber
*Director of Conservation and Community Programs:* Peter Kareiva
*Director of Curriculum Development:* Elizabeth Dahlhoff
*Associate Director of Curriculum Development:* Michelle Marvier
*Assistant Professors:* Leslie Gray, Lisa Kealhofer, Nancy Unger

The Environmental Studies Institute (ESI) offers two interdisciplinary degree programs leading to a Bachelor of Science in Environmental Science (24 courses) or a Bachelor of Science in Environmental Studies (18 courses). A minor in Environmental Studies is also available. Each program provides students with the intellectual and ethical foundations they will need in addressing the range of environmental challenges that they are likely to confront in the 21st century: e.g., urban sprawl, deforestation, global climate change, waste disposal, ozone depletion, smog, population growth, and loss of biodiversity.

ESI programs are enriched by quarterly colloquia on environmental themes, featuring presentations by journalists, politicians, businesspeople, scientists, and other scholars. Majors and minors are required to attend six of these special presentations during their time at SCU. The programs culminate in the Capstone seminar. In addition to the colloquia and coursework, students are required to complete an internship or conduct research, and they are encouraged to study abroad in ESI approved programs.

Each student works with an advisor chosen from the Environmental Studies Institute who helps integrate the interdisciplinary curriculum with the student's plans for future study and/or work in environmental fields.

## REQUIREMENTS FOR THE MAJORS

In addition to completing the University Core Curriculum and College requirements for the Bachelor of Science degree, students majoring in environmental science or environmental studies must complete the following departmental requirements:

## BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

### Lower-Division Requirements

Lower-division requirement including the following 15 courses:

- ENVS 1
- CHEM 1 or ENVS 2
- CHEM 11, 12, 13
- BIOL 21, 22, 23, 24
- MATH 11, 12

- PHIL 9
- ECON 5 or 11
- PHYS 9 or CENG 20
- One from: HIST 85, POLI 1, POLI 25, or POLI 50

### Upper-Division Requirements

Students must complete nine courses, distributed as follows:

- ENVS 101
- ENVS 199 or 198
- Five upper-division classes from an extensive list of natural-science based courses including: ANTH 142, BIOL 131, BIOL 132, BIOL 133, BIOL 150, BIOL 156, BIOL 157/ENVS 141, BIOL 158, BIOL 160, BIOL 180, CENG 143, ENVS 143, ENVS 144, ENVS 170-189, ENVS 197, POLI 130
- Two upper-division classes from an extensive list of social science-based courses including: ANTH 140, ANTH 144, ANTH 155, ANTH 180, COMM 120, ECON 101, ECON 111, ECON 129, ECON 130, ECON 134, ENGL 128, ENVS 121, ENVS 120, ENVS 130, ENVS 140, ENVS 170-189, ENVS 196, HIST 184, MKTG 182, POLI 14, POLI 167, TESP 141, TESP 173, SOCI 138

## BACHELOR OF SCIENCE IN ENVIRONMENTAL STUDIES

### Lower-Division Requirements

Lower-division requirement including the following 11 courses:

- ENVS 1
- CHEM 1 or ENVS 2
- BIOL 5 or BIOL 6 or BIOL 8
- PHYS 9
- MATH 8
- PHIL 9
- ECON 5 or 11
- HIST 85
- POLI 1, 2, or 25
- POLI/ANTH/SOCI 50
- ANTH 3 or SOCI 1

### Upper-Division Requirements

Students must complete seven courses, distributed as follows:

- ENVS 101
- ENVS 199 or 198
- Five upper-division classes from an extensive list of social science based courses including: ANTH 140, ANTH 142, ANTH 144, ANTH 155, ANTH 180, COMM 120, ECON 101, ECON 111, ECON 129, ECON 130, ECON 134, ENGL 128, ENVS 120, ENVS 121, ENVS 130, ENVS 140-43, ENVS 144, ENVS 170-189, ENVS 196, HIST 184, MKTG 182, POLI 130, POLI 146, POLI 167, TESP 141, TESP 173, SOCI 138

## REQUIREMENTS FOR THE MINOR

The Environmental studies minor supplements a wide variety of majors, from anthropology to physics, and can easily be completed by students in the College of Arts and Sciences, the Leavey School of Business and Administration, and civil engineering students in the School of Engineering. (Engineering students should consult their advisors.) The minor provides an opportunity for students to focus on environmental issues through a variety of academic approaches in the humanities, social sciences, natural sciences, engineering, and law.

Students select eight courses in the first five categories shown below, and gain further breadth by choosing an elective from an extensive list available from the ESI office in Daly Science 204. The minor is also enriched by quarterly colloquia on Environmental themes, featuring presentations by journalists, politicians, businesspeople, scientists, and other scholars. Students are required to attend six of these special presentations during their participation in the program. The program culminates senior year in the Capstone seminar where minors from diverse majors join environmental sciences majors and environmental studies majors in grappling with environmental issues. The minor requires a total of 10 courses and six colloquia.

Each minor works with an ESI advisor who helps coordinate the curriculum with the student's major and any plans for future study and/or work in environmental fields. Completion of the program is noted on the student's official transcript, and all graduates receive a certificate acknowledging their accomplishment.

## ENVIRONMENTAL STUDIES MINOR

In addition to completing the University Core Curriculum and College requirements for a Bachelor's degree, students minoring in Environmental studies must complete the following departmental requirements:

**Scientific Foundations (four courses):**

- ENVS 1
- One from: MATH 8, BIOL 156, BIOL 165, BUSN 40, COMM 110, POLI 170–174, PSYC 40.
- One from: CHEM 1, ENVS 2, PHYS 9, CENG 20, CENG 5, CENG 143, CHEM 5, CHEM 111, ENGR 5, EMVS 143
- One from : BIOL 5, BIOL 6, BIOL 8, BIOL 22, BIOL 151, BIOL 155, BIOL 156, BIOL 157, BIOL 158, ENVS 141

**Ethical or Spiritual Issues (one course):**

- One of the following: PHIL 9, TESP 141, TESP 173
- One of the following: ECON 101, ECON 134, MKTG 182

**Social and Cultural Dimensions (one course):**

- One of the following: POLI/ANTH/SOCI 50, ANTH 142, ANTH 144, ANTH 155, COMM 120, POLI 130, SOCI 138, HIST 184, HIST 85/185, ENGL 79/128

**Political and Legal Dimensions (one course):**

- One of the following: ENVS 120, ENVS 121, ENVS 140, POLI 146, POLI 167, POLI 196

**Electives (one course):**

- One course required; may be chosen from any courses listed above, or ANTH 180, BIOL 131, BIOL 133, ECON 5/11, ENVS 144, ENVS 196-199, POLI 165

**ES Capstone (one course):**

- ENVS 101

**Environmental Studies Colloquium (6), or ENVS 98 or ENVS 99**

The environmental studies minor supplements a wide variety of majors, from anthropology to physics, and can easily be completed by students in the College of Arts and Sciences, the Leavey School of Business and Administration, and civil engineering students in the School of Engineering. (Engineering students should consult their advisors.) The minor provides an opportunity for students to focus on environmental issues through a variety of academic approaches in the humanities, social sciences, natural sciences, engineering, and law.

## ENVIRONMENTAL STUDIES COURSES

### *1. Introduction to Environmental Science*

Today's global environment is subjected to unprecedented pressures and changes. Our challenge, as humans, is to learn how to live on the planet sustainably. This course will first explore basic concepts in ecology and scientific investigation. The course will then examine challenges such as population pressure, consumerism, global climate change, habitat loss, and pollution, with a view to finding innovative solutions. (4 units)

### *2. Energy and the Environment*

Energy has been a top new story over the past years. In this course, we will explore the basics of energy production, alternative ways of producing energy and alternative energy sources including natural gas, nuclear, biomass, wind, solar, hydropower and fuel cells. Gain an understanding of the environmental impacts of energy production, our present energy crisis and prospects for the future. (4 units)

### *98. Outdoor Leadership Experience (OLE)*

On a Pass/No Pass basis for individuals who welcome the opportunity to explore the natural world, gain safety and outdoor technical skills, and learn about the environment. (2 units)

### *99. RLC Seminar Class*

Students read recent publications or listen to environmental speaker on various environmental issues and discuss the topics in small groups. (1 unit)

### *101. Capstone Seminar*

How do we manage global environmental health? International agencies, NGOs, and countries need to know what are the biggest environmental problems and where actions need to be taken. We will examine case studies of large-scale environmental monitoring and ask what ingredients lead to its success. (5 units)

### *120. Introduction to Environmental Law and Regulation in the United States*

Introduction to the U.S. legal system's approach to environmental protection. Topics include the roles of legislatures and environmental agencies at the federal, state, and local levels; the independent role of the judiciary in establishing environmental law; and specific statutes, such as the Clean Air Act. Students evaluate questions of federalism, uses of economic incentives, relationships between environmental protection and economic growth, etc. (5 units)

### *121. Environmental Activism*

In this course students will have the opportunity to explore the history of and current approaches to environmental activism, with the goal of understanding effective approaches towards fostering change. Guests from a wide variety of environmental activist groups will visit the class to share their expertise and knowledge. (5 units)

### *130. Environmental Art: Theory and Practice*

Work and study directly with an artist focused on environmental issues. First, learn how contemporary artists are responding to environmental issues. Then, learn skills for creating a conceptually-based installation. These skills will include creativity techniques, building scale-models, working with teams, and creating a full-scale installation.

### *140. Politics in Less-Developed Countries: Environmental Policy in Trinidad and Tobago*

This summer course examines the public-policy process in the Caribbean with an emphasis on environmental issues in Trinidad and Tobago. Topics may include the political economy of development, interest groups, legislative and executive roles, the private sector, mass movements, and international influences. Includes two-week field excursion to Trinidad and Tobago. *Prerequisite: POLI 2 or 25 recommended but not required.*

### *141. Environmental Biology in the Tropics*

This summer course examines basic biological features of a diversity of tropical habitats and species of special concern in the tropical nation of Trinidad and Tobago. A two-week field excursion to the islands is required. Topics may include ecotourism and coral reefs, rain forest ecology, the cage-bird problem, environmental activism in local communities, leatherback turtles, and dangers to mangrove swamps and the scarlet ibis. Also listed as BIOL 157. *Prerequisite: BIOL 23.* (5 units)

### *142. Nonfiction Writing: Writing about Nature and the Environment in Trinidad and Tobago*

This summer course provides instruction in the writing of essays, journalistic features, and reports on topics related to nature and the environment with specific attention to Trinidad and Tobago. A two-week field excursion to the islands is required. *Prerequisite: ENGL 1 and 2.* (5 units)

### *143. Special Issues in Environmental Chemistry*

Also listed as CHEM 193. For course description see CHEM 193. (5 units)

### *144. Natural History of Baja*

Examination of natural history and ecology of desert and coastal ecosystems in Baja California Sur, with special attention paid to issues of development, fisheries, and sustainability. Meets once a week during winter quarter at SCU and over spring break at School for Field Studies in Baja. Students must apply to course faculty to participate. Some travel fees not included. *Prerequisite: ENVS 1 or BIOL 23.* (5 units)

### *196. Special Topics in Environmental Studies*

An environmental studies course taught by a visiting professor. This course content and topics vary depending on the professor. (5 units)

### *197. Special Topics in Environmental Science*

An environmental science course taught by a visiting professor. This course content and topics vary depending on the professor. (5 units)

### *198. Independent Research or Internship*

Students wishing to enroll in 198A or 198B should prepare a written description of the proposed course for review by the ESI director in the fifth week of the term preceding the start of the project. *Prerequisite: Permission of ESI director and instructor before registration.* (1–5 units)

### *198A. Internship*

Participation in a formal program focusing on environmental problems in an off-campus setting. Work will proceed under guidance of cooperating specialists. Frequent meetings with on-campus advisors suggested. (1–5 units)

### *198B. Research*

Supervised research on campus under the guidance of a faculty member. Work is generally sustained for one year with credit given only during one quarter. The goal should be a written report suitable for publication. (1–5 units)

### *199. Directed Reading and Research*

Detailed investigation based on directed readings on advanced environmental topics, under the close supervision of a faculty member. *Prerequisite: Permission of ESI director and instructor before registration.* (1–5 units)

## DEPARTMENT OF HISTORY

*Professors Emeriti:* Mary McDougall Gordon, Norman F. Martin, S.J., Matt S. Meier, Peter O'M. Pierson
*Professors:* Steven M. Gelber, William S. Greenwalt (courtesy of Classics Department), Jo Burr Margadant, Gerald McKevitt, S.J., Barbara Molony, Timothy J. O'Keefe, Robert M. Senkewicz, David E. Skinner
*Associate Professors:* Ramon D. Chacón, Dorothea R. French, George F. Giacomini Jr., Arthur F. Liebscher, S.J., Sita A. Raman, Thomas Turley *(Chair)*
*Assistant Professors:* Fabio López-Lázaro, Nancy Unger

History provides an understanding of all aspects of the human past. By synthesizing the humanities and social sciences, the study of history develops the ability to research, analyze, and communicate the reasons nations and peoples have evolved in particular ways. Knowledge and skills developed in history are excellent preparation for graduate study and careers in education, communications, government, law, and business.

## REQUIREMENTS FOR THE MAJOR AND MINOR

The history major combines breadth and depth. Students engage the expanse of human culture through the required study of diverse geographical areas. Students study one culture more deeply by taking at least five courses in a required area of specialization.

In addition to the general University Core Curriculum requirements and the degree requirements for the Bachelor of Arts, majors must complete at least 14 courses that meet the following requirements:

1. At least one course in each of the five geographical areas offered by the department: Africa/Middle East, Asia, Europe, Latin America, and United States.
2. Four lower-division courses that include the study of at least three of the five geographical areas mentioned above, at least one of which must be in the student's area of projected individual specialization.
3. Eight upper-division courses, four of which must be in the student's individual area of specialization. The normal specialization areas are the five geographical areas, but other geographical, thematic, and/or chronological specialization areas may be developed by students in consultation with the department faculty.
4. HIST 100 and HIST 101, which may be counted either among the four lower-division courses or the eight upper-division courses. It is recommended that these be taken at the end of the sophomore or the beginning of the junior year.
5. A two-course, upper-division Capstone sequence, which should be taken in the senior year.

A minor in history is also available. It requires a minimum of seven courses, at least four of which should be upper-division.

## PREPARATION IN SOCIAL SCIENCES FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

*Coordinator:* Robert M. Senkewicz

The state of California requires that persons seeking a credential to teach history in California schools hold a Single-Subject Teaching Credential in social science authorizing them to teach history and social science classes in departmentalized settings. Students wishing to enroll in a credential program must either pass a subject-area examination in social science or complete a state-approved Subject-Matter Preparation Program in social sciences. The teaching credential program itself requires the completion of an approved credential program which can be completed as a fifth year of study with student teaching or through a summer program and internship in conjunction with the undergraduate preteaching program.

The History Department offers a program that satisfies the requirements for the state of California Subject-Matter Preparation Program in social science. The program is similar to the history major with some significant modifications. Requirements are 14 history courses: six lower-division (HIST 7, 8, 9, 11, 12, and 13); eight upper-division (HIST 100, 101, 186, 189, 190, and one course each in Africa, Asia, and Latin America); five social science courses: ECON 5; ANTH 50; POLI 1 or 2, and one upper-division elective; one elective in the behavioral sciences (anthropology, psychology, sociology); and one teaching practicum: EDUC 98 or 198B or equivalent supervised teaching.

Because the program requirements are very specific, students who contemplate enrolling should consult the coordinator at an early date.

## GENERAL REQUIREMENTS

### *100. Historical Interpretation*

An investigation of the diverse methods historians use to examine the past. *For history majors/minors only or with permission of the instructor.* (Also fulfills a European requirement in the major) (5 units)

### *101. Historical Writing*

Researching and writing history papers. Required of all majors in last quarter sophomore year or first quarter junior year. *For history majors/minors only or with the permission of the instructor.* (Also fulfills a U.S. requirement in the major) (5 units)

### *198A. and 198B. Capstone Seminars*

The Capstone seminars are topical courses usually taught by more than one faculty member. They give students an opportunity to examine an issue from a variety of historical perspectives. The seminars run for two quarters (A and B). Students may not take the second (B) without having taken the first (A). The first quarter is devoted to reading and discussion. Under the guidance of a director chosen by the students, the second quarter is used to write a paper on the seminar topic. (5 units)

## WORLD AND COMPARATIVE HISTORY

### *14. Modern World History*

Examines the significant events, relationships, and ideas that have shaped the development of a transformed international system during the past 300 years. The course will focus on a few themes, rather than attempt a chronological survey of different regions or cultures. Major themes include the scientific and industrial revolutions, new technologies, nationalism and imperialism effects of new technologies, anticolonialism and neo-imperialism, the new world (dis)order. (4 units)

### *102. Historical Perspectives*

Editorial Board work for the department's journal, *Historical Perspectives. Permission of instructor required.* (2 units)

### *103. History of the Jesuits*

This interdisciplinary course examines the evolution of the Society of Jesus (the Jesuits) from the order's founding at the close of the Middle Ages to the present. Selected themes include: the defining features of Ignatian spirituality, the development of the order's educational system, the Jesuit role in the encounter between European cultures and the cultures of Asia and the Americas, and the new orientations of the order that have emerged in reaction to changes in Catholicism and in the world at large in the late 20th century. (5 units)

### *104. African Americans and Africa*

Historical examination of the roots of African American culture and politics: the impact of the Atlantic slave trade and the continuity of African culture in the Western hemisphere. (5 units)

### *105. Modern World History*

Examines the significant events, relationships, and ideas that have shaped the development of a transformed international system during the past 300 years. The course will focus on a few themes, rather than attempt a chronological survey of different regions or cultures. Major themes include the scientific and industrial revolutions, new technologies, nationalism and imperialism, effects of new technologies, anticolonialism and neo-imperialism, the new world (dis)order. (5 units)

### *199. Directed Reading/ Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in world and comparative history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## U.S. HISTORY

### *7. United States: Colonies and Constitution*

Introductory survey of U.S. history from first European settlement through the Constitutional Convention. Political, economic, social, and intellectual aspects of America's first 200 years. (4 units)

### *8. United States: The 19th Century*

Introductory survey of U.S. history from the Constitutional Convention to the Spanish American War. Political, economic, social, and intellectual aspects of the century that saw the nation evolve from an infant state to an industrial world power. (4 units)

### *9. United States: The 20th Century*

Introductory survey of U.S. history from the Spanish American War to the present. Political, economic, social, and intellectual aspects of America in an era of international involvement and domestic change. (4 units)

### *79. SEM: Individualism and Community*

What have been the effects of the historical conflict between individualism and community in American history? This seminar explores both the theoretical and applied problems in our nation's attempt to allow maximum freedom for the individual without sacrificing a sense of community and mutual responsibility. (4 units)

### *81. Chicanos in the Southwest*

Survey of the Chicanos in California and the Southwest. Emphasis on the period since 1848 and on Texas, New Mexico, and California. (4 units)

### *84. Women in American Society*

This course will examine the rich history of the changing social, economic, political, and intellectual life of women in the United States. Issues of gender, race, class, geographic setting, and ethnicity will merit appropriate attention. Through a variety of primary and secondary sources, we will examine women's self-conceptions and self-identifications, as well as gender constructs and prescribed roles. (4 units)

### *170. Revolution, Confederation, Constitution*

Intensive study of the origins, progress, and culmination of the American Revolution to 1800. (5 units)

### *171. The New Nation*

Social and political reforms, expansion, and changes, sectional and national politics of the United States between 1800 and 1850. (5 units)

### *172. The Union in Crisis*

A study of the major aspects of the antebellum period, the Civil War, and the problems of Reconstruction: the abolitionists, the rise of the Republican Party, the conduct of the war, the role of the free African American, constitutional readjustment, and the rise of the new South. (5 units)

### *173. The Modern Era: 1920–1960*

The end of the Republican ascendance in the 1920s and the rise of the New Deal coalition. America at war again and the Cold War at home and abroad. (5 units)

### *174. America in the 1960s*

Little Rock to Watergate: social, political, and foreign policy upheavals of the 1960s. Civil rights movement, student and anti-war movements, hippies, and others. Kennedy and Johnson, end of the Cold War and the Vietnam War, Nixon and Watergate. (5 units)

### *175. 20th-Century U.S. Diplomatic History*

Critical study of U.S. international relations. Economic, political, social, and public opinion forces influencing the development of U.S. policy. (5 units)

### *176. Social Movements in 20th-Century America*

Popular movement for and against change. Investigation of the response of the American people to the problems of modern Industrial society. Labor, women's rights, black activism, anti-radicalism, Ku Klux Klan, peace movement, and others. (5 units)

### *177. Gays and Lesbians in U.S. History*

This course will examine the significance of gay men and lesbians across the broad sweep of American history, beginning with pre-Columbian Native Americans and concluding with the modern era. Religious, intellectual, economic, political, and social ramifications will all be examined. (5 units)

### *179. Special Topics in Early U.S. History*

Occasional lecture courses in special topics in U.S. history. (5 units)

### *180. Native Americans of U.S.*

Native American history from colonial times to the present from the perspective of native peoples. The focus is on selected Indian peoples in each historical period with an emphasis on native responses to changing historical circumstances, the continuity of Native American cultures, and Indian relations with the U.S. government in the 19th and 20th centuries. Topics include colonialism, Native Americans and environments, regional and tribal histories. (5 units)

### *181. American Women Since 1900*

This course will examine the rich history of the changing social, economic, political, and intellectual life of American women from 1900. Issues of gender, race, class, geographic setting, and ethnicity will merit appropriate attention. Through a variety of primary and secondary sources, we will examine women's self-conceptions and self-identifications, as well as gender constructs and prescribed roles. Women's role in the Gilded Age, the Progressive Era, WWI, the Depression, and WWII will be followed by extensive coverage of the transitions created/endured by American women from the post-war period to today including the rise of feminism and its ongoing challenges. (5 units)

### *182. Sex and Family in American History*

History of sex and the family from the 17th to the 20th century. Impact of social and economic change on sexuality, courtship, marriage, and child rearing. Cultural construction of gender roles and sexual roles. (5 units)

### *183. American Capitalism*

Analysis of the philosophy and social impact of the capitalist idea as it developed in America from the colonial period to the 20th century. The role of the businessperson, social mobility, and some anti-capitalist ideas. (5 units)

### *184. American Historical Geography*

This course will introduce students to the physical and cultural geography of the United States with a special emphasis on California. Through texts, maps, and discussions, we will explore how America's geography is not just the stage for American history but an integral player in that history. (5 units)

### *185. American Environmental History*

This course will introduce students to this exciting and vital new field, beginning with pre-Invasion Indians and concluding with an assessment of the American environment today. Through readings and discussions we will examine a variety of influential issues and themes. Particular emphasis will be paid to politics (both domestic and foreign), gender, race, ethnicity, and religion. The assigned readings have been selected to provide a sampling of the variety of current historical approaches to this lively discipline. (5 units)

### *186. California*

Survey of the state's history: its Native American origins, Spanish invasion and missionization, Mexican period, U.S. conquest, gold rush, and development to the present. (5 units)

### *187. The American West*

A study of the American West as frontier and region in transit from the Atlantic seaboard to the Pacific coast from the 17th century to the present with an emphasis on the 19th-century trans-Mississippi frontier. Topics include European invasions of the aboriginal world; exploration; the fur trade; mining and farming frontier; ethnicity and gender in multicultural regions; the West in film, fiction, and art; contemporary meaning of the West. (5 units)

### *189. Special Topics in Modern U.S. History*

(5 units)

### *190. Capstone Seminar in Social Sciences*

This seminar is open only to students enrolled in the subject matter preparation program in social sciences, or to liberal studies majors with a minor in history. The course is designed for students who contemplate a career in the teaching profession. As a Capstone Course, it integrates the subject matter from courses in the social sciences including history, economics, geography, political science, and education. (5 units)

### *197. Seminar in U.S. History*

Original research and group discussions of selected problems and periods. (5 units)

### *199. Directed Reading/ Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in U.S. history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## EUROPEAN HISTORY

*In addition to the History courses listed below, the following Classics courses fulfill the European history area requirements: 67, 68, 108, 109, 110, 111, 114, 119, and 187.*

## History Courses

### *11. Western Civilization: Ancient*

Interdisciplinary survey of the development of Western culture from the Near Eastern origins of Western civilization through the collapse of the Roman Empire. Open to all students. (Also listed as CLAS 62.) (4 units)

### *12. Western Civilization: Medieval and Early Modern*

Interdisciplinary survey of the development of Western culture from the fall of the Roman Empire to the age of Louis XIV. Open to all students. (4 units)

### *13. Western Civilization: Modern*

Interdisciplinary survey of the development of Western culture from 1715 to the present. Open to all students. (4 units)

### *16. Ancient Greek Religion*

Also listed as CLAS 67. For course description see CLAS 67. (4 units)

### *17. Ancient Roman Religion*

Also listed as CLAS 68. For course description see CLAS 68. (4 units)

### *108. Ancient Greece*

Also listed as CLAS 108. For course description see CLAS 108. (5 units)

### *109. The Hellenistic Age*

Also listed as CLAS 109. For course description see CLAS 109. (5 units)

### *110. Roman Republic*

Also listed as CLAS 110. For course description see CLAS 110. (5 units)

### *111. Roman Empire*

Also listed as CLAS 111. For course description see CLAS 111. (5 units)

### *112. Byzantine History*

An examination of the later Roman (Byzantine) Empire (A.D. 313–1453) and its important role in preserving and transmitting the Greco-Roman tradition and acting as the conduit for cultural, religious, and economic exchange between the East and the West. (5 units)

### *113. Family in Antiquity*

Also listed as CLAS 187 and ENGL 186C. For course description see CLAS 187. (5 units)

### *114. Imperialism and Religion: Roman Britain*

Also listed as CLAS 114. For course description see CLAS 114. (5 units)

### *117. State and Church in the Middle Ages, 1000–1450*

The struggles between state and church that formed modern Western political institutions. The rise of royal and papal theocracy, the emergence of the idea of limited government, the foundation of representative institutions and modern legal institutions, the origins of the modern state. (5 units)

### *119. Dynasties and Discoveries: Europe, 1560–1763*

Empires, warfare, and the growth of the early modern state. Culture and thought in the Age of Scientific Revolution and Enlightenment. (5 units)

### *120. Churchill's England*

A study of modern English history through the extraordinary career of Winston Churchill. Britain's imperial zenith, the English suffragettes, World War I, the Anglo-Irish conflict, English appeasement of Nazi Germany, World War II, the formation of the English welfare state. (5 units)

### *121. Interpreting the English Reformation*

A study of the religious changes in 16th-century England from the accession of Henry VIII to the Gunpowder Plot. This course will evaluate traditional medieval patterns of belief and worship, Tudor dynastic necessities and political ambitions, the influence of continental theological reformation, and popular acceptance or rejection of religious innovations. (5 units)

### *124. European Diplomatic History*

Relations of major European powers since 1870. Emphasis on economic, political, and social forces that influenced these relations. (5 units)

### *125. Medieval European Women*

An examination of the ways society's constructs of power and control affected medieval women's lives and the ways in which women affected society. Focus on marriage and the family, the Church, public power and authority, the economy, and sex and love. (5 units)

### *126. Conflicts in Medieval Christianity*

An examination of the religious tensions and conflicts that helped form later medieval Christianity. Treats heresies, developing notions of orthodoxy and authority, the warrior Christianity of the Crusades, mendicancy and urban attitudes toward Christian perfection, the new monasticism, the development of a personal religion, lay tensions with the clergy, the inquisition, the climate of reformation. (5 units)

### *127. Seminar: The World of St. Francis*

The seminar examines the religious, social, and economic background that produced Francis of Assisi, one of the most revolutionary figures of the late Middle Ages. It will focus on shifts in religious perception and new notions of religious perfection gaining popularity in Francis' time, Francis' personal motivations, and the struggle the medieval church experienced attempting to integrate Francis and his followers into its structure. (5 units)

### *128. History of Early Christianity*

Also listed as CLAS 119. For course description see CLAS 119. (5 units)

### *129. Special Topics in Ancient and Early Modern European History*

Occasional lecture courses in selected topics in ancient and early modern Europe. (5 units)

### *131. Ireland*

Irish history since the Reformation. Emphasis on the formation of modern Irish nationalism, the revolutionary movements of the 19th and 20th centuries, and the Northern Irish conflict. (5 units)

### *135. Gender in Modern French History and Literature*

This interdisciplinary, team-taught course explores how conflicts over cultural definitions of masculine and feminine behavior helped shape the political history of France and the literary imagination of major (male and female) French novelists from the Enlightenment to the present. It seeks to demonstrate why gender has become an indispensable category of historical analysis and how situating novels in the historical moment that produced them enriches our interpretations of such texts. The course will emphasize class discussion. (5 units)

### *136. Gender/Race/Class in 20th-Century Europe*

This course examines the many ways that social anxieties about racial mixing, gendered boundaries, and class identity shaped developments in politics, the fine arts, and popular culture in Western Europe from 1900 to the present. Topics include the consolidation of bourgeois respectability in prewar Europe and the challenge posed to it by feminism, Marxism, and artistic modernism; the rise of fascism in Italy and Germany; the Spanish Civil War; class conflict in the Great Depression; World War II and the Holocaust; the battle for Algerian independence; the consumer society of the 1950s and 1960s; the student revolt of 1968; the rise of postmodernism; immigrants in Europe today; and the European Union. (5 units)

### *139. Special Topics in Modern Europe*

Occasional lecture courses in selected topics in modern Europe. (5 units)

### *192. Seminar in European History*

Original research and group discussions of selected problems and periods. (5 units)

### *199. Directed Reading/Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in European history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## AFRICAN HISTORY

### *45. Introduction to African History and Cultures*

Historical survey of the origins and development of African cultures from ancient times to the onset of European colonialism in the 19th century. Focus on selected civilizations and societies. Patterns of African social, economic, and political life. (4 units)

### *107. Ancient Egypt*

An historical survey of the social, political, religious, and cultural achievements of ancient Egypt, emphasizing especially the period of Egypt's unification through Egypt's conquest by Alexander the Great. (4 units)

### *141. Independent Africa*

African economic, social, and political problems after independence. Major ideologies and international conflict. (5 units)

### *142. Modern Middle East and North Africa*

European imperialism and the development of Arab nationalism. Problems of economic development, political stability, and military conflict. (5 units)

### *143. Seminar: Women in Political Revolutions*

This course will focus on the various roles of women in conceiving, organizing, and pursuing revolutionary processes. The course will be set in a comparative framework, and the revolutions will be selected from many distinctive cultural milieu. Most of them may be described as patriarchal, and we will be interested in evaluating the changing roles of women in relation to existing patterns of gender expectations. (5 units)

### *144. Women in African Societies*

Comparative analysis of the legal position of women and their social, economic, and political roles in different African and Middle Eastern cultural settings. (5 units)

### *149. Special Topics in African History*

Occasional lecture courses in special topics in African history. (5 units)

### *158. Islam in the Modern World*

Comparative study of contemporary Islam. The study of origins and basic doctrines of Islam, and its development to the modern world. Main focus will be on Islam's interaction with different cultures, emphasizing political implications of the rise of revivalism. (5 units)

### *193. Seminar in Africa and Middle East*

Original research and group discussion of selected problems and periods. (5 units)

### *199. Directed Reading/ Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in African history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## ASIAN HISTORY

### *50. Introduction to East Asian Studies*

A study of the emergence of modern nations from the rich and diverse cultures of the Pacific and the mutual transformations of East Asia, Europe, and America in the past century. An examination of the linkages within the region and with other regions using concepts borrowed from anthropology, economics, and political science. (4 units)

### *51. Introduction to Chinese Civilization*

History and culture from the dawn of civilization to the post-Maoist present. Ancient philosophies. Confucianism, traditional political institutions, urbanization, the impact of the West, 20th-century reform and revolution. Modern society, politics, and economics. (4 units)

### *52. Introduction to Japanese Civilization*

Two thousand years of Japanese history and culture. Age of classical civilization, feudalism and shogunal government, 19th-century modernization, imperialism. War in the 20th century. Postwar social and economic successes. (4 units)

### *54. Introduction to South Asia*

A 5,000-year survey of the dynamic development of India, Pakistan, Bangladesh, Nepal, and Sri Lanka from the Indus Valley to postmodern times. Using multidisciplinary concepts, the study will focus on the subcontinent's rich and unique mosaic of social, religious, cultural, intellectual, economic, and environmental systems set against the backdrop of dramatic political events. (4 units)

### *55. Introduction to Southeast Asia*

Historical survey of the civilizations of Malaysia, Indonesia, Burma, Thailand, Cambodia, Laos, Vietnam, and the Philippines from their origins to the present day. The focus will be on societies, cultures, religions, colonialism, nationalism, and postmodern socioeconomic issues. (4 units)

### *56. Wives, Mothers, and Goddesses: Women in Indian Literature*

Women in classical and medieval India as they appear in literature, and as modern historians have depicted them. Students will study epics and poems in translations, some of which were composed by women. The focus will be on gender relations in early Indian family and society; on notions of sexuality as represented in the arts; on goddesses, saints, and devotees in Hinduism, Buddhism, and Jainism. (4 units)

### *57. Rajas and Sultans in Medieval India*

History of medieval India with a specific focus on ideas of kingship in Hindu and Muslim states between 600–1700 A.D. Examines specific Hindu dynasties, the Indianization of Afghani, Turkish, and Mughal rulers who followed Islam, and the interaction between Hindus and Muslims in this era. (4 units)

### *58. Modern India*

India after Portuguese arrival in 1498 to the present. Themes include: economic imperialism, Hindu socioreligious reform and its relevance for women and the caste system; Muslim awakening and modernization; Indian revolts and nationalism; constitutional developments; Gandhi, Nehru, Jinnah; post-independence issues concerning democracy, women, society, economic development and environment, national cohesion, and communalism. (4 units)

### *146A. Medieval and Early Modern Japan*

From prehistoric times to the mid-19th century. Japan's adaptation of Chinese civilization, cultural and literary history, political effects of socioeconomic changes from the classical period through feudalism to interaction with the West, ideological developments and response to Western encroachment. (5 units)

### *146B. Modern Japan*

Major themes in Japanese modern history since 1868. Japan's 19th-century "economic miracle"; problems faced by a rapidly modernizing agrarian economy; nationalism and imperialism and their effects on foreign policy; adaptation of Western ideals and institutions; social and political movements in the 20th century, especially the suffrage and labor movements; postwar reconstruction. *May be taken without first taking 146A.* (5 units)

### *147A. Premodern China*

Chinese civilization from the earliest times to the Western intrusion. Dominant historical and cultural patterns; evolution of Confucianism, Taoism, and Buddhism; development of political institutions; analysis of preindustrial economic experience; state-society relations. (5 units)

### *147B. Modern China*

Social, political, economic, and cultural development from the 17th to the 20th centuries. State formation from monarchy to socialism, cultural history from Confucianism to individualism, issues of poverty and population. Intellectual and cultural changes and the roles of the West. Indigenous forces shaping China's modern evolution. *May be taken without first taking 147A.* (5 units)

### *148. U.S.-Japan Relations*

The two Pacific powers: their initial gunboat encounter in 1853; the rise of imperialism; rivalry for influence in East Asia. The Pacific War and its aftermath. Contemporary trade and security issues. (5 units)

### *150. Women in East Asia*

Gender as a historical category in analyzing the impact of change in East Asia from antiquity to the modern period. Changing roles and status of women under industrialization, intellectual development, and legal reform. (5 units)

### *151. Imperialism in East Asia*

This course examines the cultural, social, political, and economic effects of imperialism in four countries in East Asia: China, Korea, the Philippines, and Vietnam. Imperialism took varied forms, depending on the interests of the imperialist country and the conditions in the country under imperialism. Readings will include both literary and historical sources and will illuminate cultural as well as political changes. (5 units)

### *154A. Ancient and Classical India*

India from its prehistoric roots to about A.D. 1000 with a focus on these sacred and secular themes: the development of Hinduism, Buddhism, Jainism; religious and philosophical texts, beliefs, and practices; social stratification through caste (varna-jati), gender, and ethnicity; kingship and the state; trade and cultural expansion to Asia; religious art and classical literature. (5 units)

### *154B. State, Religion, and Gender in Medieval India*

India after the arrival of Islam with a focus on Hindu and Muslim models of kingship and the state; royalty and religious art; Hindu devotional movement (bhakti); Islam as a religious and political force in India; Sufism; social and religious syncretisms; Sikhism; gender in Hindu and Muslim societies in India. *May be taken without first taking 154A.* (5 units)

### *154C. Colonial India*

India after Portuguese arrival in 1498 to the present. Themes include economic imperialism, Hindu socioreligious reform and its relevance for women and the caste system; Muslim awakening and modernization; Indian revolts and nationalism; constitutional developments; Gandhi, Nehru, Jinnah; post independence issues concerning democracy, women, society, economic development and environment, national cohesion, and communalism. *May be taken without first taking 154A or B.* (5 units)

### *155. Women in South Asia*

The history of women in South Asia from the earliest times to the present using multidisciplinary methods and data; tribal and Dravidian matriarchies, Aryan patriarchy; women in Hinduism, Buddhism, Jainism; gender, caste, class as analytical categories; social change for Hindu and Muslim women in the 19th and 20th centuries; feminism and nationalism in India and Pakistan. (5 units)

### *156. Imperialism in South and Southeast Asia*

Portuguese, Dutch, French, and English trade and mercantilism in South and Southeast Asian colonies; political hegemony and administration, and the implications for local states, elites, peoples; laissez-faire and economic imperialism; Westernization, missionaries, modernization, and nationalism; Asian responses to the imperial presence. (5 units)

### *157. Art and Religion of India*

Hindu, Buddhist, and Jain beliefs and practices as depicted in ancient and medieval Indian sculpture, architecture, and painting. Students will study the evolution of iconic representation in India; sacred geography and image worship; the artistic, religious, and social implications of the Buddhist stupa and chaitya; Puranic Hinduism, bhakti devotional saints; and the evolution of the Hindu temple and its role in the medieval state. (5 units)

### *159. Special Topics in Asian History*

Occasional lecture courses in special topics in Asian history. (5 units)

### *194. Seminar in South Asian History*

Original research and group discussion of selected problems and periods. (5 units)

### *195. Seminar in East Asian History*

Original research and group discussion of selected problems and periods. (5 units)

### *199. Directed Reading/ Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in Asian history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## LATIN AMERICAN HISTORY

### *61. Latin American Origins*

Introduction to Latin American culture and civilization from the Native American empires, through the Iberian conquest, to the independence of Latin American nations. (4 units)

### *62. Modern Latin America*

Introduction to Latin American history focusing on the formation of 19th-century nations and the forces shaping their 20th-century experience. (4 units)

### *64. Central America*

Survey of Central America from independence to the present. Focus on three Central American countries: Nicaragua, Guatemala, and El Salvador. Emphasis on recent developments; social, economic, and political problems (militarism, dictatorship); and the nature of U.S. policy vis-à-vis Central America. (4 units)

### *160. Mexico: Colonial and Early National Periods*

Mexico from the Mayas and Aztecs to the Benito Juárez era in the 1870s. The Indian past, the Spanish conquest, and independence to Juárez's La Reforma. (5 units)

### *161. Modern Mexico*

Mexico since the Benito Juárez regime to the present. Emphasis on the Porfiriato, the 1910 Revolution and its institutionalization, and the development of the modern state. (5 units)

### *162. Argentina*

The political and economic development of this southern South American nation from the late 18th century to the present, with emphasis on 19th-century gaucho leaders and liberalism, and also on 20th-century democracy, militarism, and Peronism. (5 units)

### *163. Cuba and the Caribbean*

A survey from the colonial period to the present of three Caribbean nations: Cuba, the Dominican Republic, and Puerto Rico. Emphasis on 20th-century developments; social, economic, and political issues (dictatorship, revolution, social stratification); and the role of U.S. policy vis-à-vis Cuba and the Caribbean. (5 units)

### *164. Seminar: The Catholic Church in Latin America*

This seminar will study the interplay between history and religion, discuss the range of legitimate Church activity, weigh the role of the Church in Latin American life, and place liberation theology in an intellectual and historical context. Prior encounter with Latin American studies is helpful but not necessary. (5 units)

### *169. Special Topics in Latin American History*

Occasional lecture courses in special topics in Latin American history. (5 units)

### *196. Seminar in Latin American History*

Original research and group discussion of selected problems and periods. (5 units)

### *199. Directed Reading/ Directed Research*

Directed reading and research in source materials and secondary works dealing with selected historical problems in Latin American history. *Prerequisite: Permission of department chair and instructor.* (5 units)

## PROGRAM IN INDIVIDUAL STUDIES

*Director:* Jean J. Pedersen

An individual studies major has been established to meet the needs of students who wish to design a course of studies with a multidisciplinary perspective.

### REQUIREMENTS FOR MAJOR

Students who wish to be admitted to the program as a candidate for the degree of Bachelor of Arts or Bachelor of Science in Individual Studies must

1. Be a full-time student at Santa Clara for at least one year;
2. Have fewer than 111 quarter units of academic work completed at the time of application;
3. Have a minimum 3.0 grade point average; and
4. Submit a Petition for Admission to the program director for review and approval.

The student petition should include

1. A clear, logical, and conceptually refined description of the proposed program;
2. A well-developed argument, supported by appropriate evidence, showing that no existing academic major can meet the student's educational objectives; and
3. A plan of study listing courses, seminars, internships, etc., which corresponds to the student's educational objectives and fulfills the requirements of the University Core Curriculum.

## PROGRAM IN LIBERAL STUDIES

*Director:* Eleanor Willemsen
*Associate Professor:* Timothy C. Urdan
*Assistant Professor:* Carol A. Giancarlo

The liberal studies major is designed for undergraduates interested in a career in elementary school teaching or students seeking a broad background in the liberal arts and sciences. Completion of the liberal studies major prepares students broadly in the Arts and Sciences and provides background in subject matter taught in grades K-8. The teaching credential itself requires the completion of an approved credential program which can be completed as a fifth year of study with student teaching or through a summer program and internship in conjunction with the undergraduate program.

The Liberal Studies Program was developed by a faculty committee representing the social sciences, mathematics, natural sciences, and the humanities in consultation with faculty from the Department of Education. The curriculum encourages critical thinking, sensitivity to human values and ethical principles, and a respect for and appreciation of diverse cultures. By learning how to learn, students in the Liberal Studies Program prepare themselves to understand a constantly changing and challenging world.

### Eastside Future Teachers Project (EFTP)

Started in 1995, EFTP is a program developed to attract Eastside Union High School District high school juniors and seniors into the teaching profession. It is hoped that EFTP will increase the number of underrepresented students who choose teaching as a career. For additional information, contact the EFTP in the Liberal Studies Program office.

## REQUIREMENTS FOR THE MAJOR

Students should declare a major in liberal studies by the end of their freshman year. Students must complete at least 14 upper-division courses. A 2.6 GPA is required for admission to the program; all required courses in the major must be passed with at least a grade of C– or be repeated or substituted. All students who declare liberal studies or are interested in pursuing the liberal studies major are required to take LBST 10 prior to enrolling in other LBST or EDUC courses in the program. It is recommended that LBST 10 be completed within the first two quarters after the major declaration. Contact Liberal Studies for more information.

The liberal studies major requires (1) a common program of study that provides the foundation for the breadth of subjects taught in elementary school and (2) an in-depth study in one area or discipline, which may be achieved through either the completion of the programs designated below as concentrations or a minor or major in another field. If a student chooses a second major, some of the required courses in that major may substitute for some of the following breadth requirements. In addition to the breadth requirements, all students are strongly encouraged to take HIST 186, COMM 20, ENGL 180, SOCI 153, EDUC 106, and EDUC 163.

### Breadth Requirements

1. *Language Arts/Literacy*
   a. ENGL 1, 2, 101, and 160; and one literature course that meets both the University Core Curriculum requirement for a third writing course and the state requirement for a third literature course
   b. EDUC 184; Introduction to Reading
   c. Foreign language: completion of three quarters in one language or equivalent proficiency
2. *Mathematics and Natural Science*
   a. MATH 6, 8, 44, and 45
   b. Four required science courses: PHYS 4, PHYS 9, BIOL 17, CHEM 2
3. *History and Social Science*
   a. Seven history courses: HIST 4, 5, 7, 8, 11, 12, 184
   b. ECON 5
   c. POLI 1, SOCI 132
   d. PSYC 1 or 2

4. *Humanities*
   a. Three religious studies courses: one introductory level, one intermediate level, and one upper-division course (advanced level) taken after achieving junior status
   b. One ethics course in the Philosophy Department; PHIL 5
   c. One visual arts course; ARTS 100
   d. Four units of performing arts courses; THTR 13 or approved substitute
5. *Child Development/Physical Education/Health Education*
   a. PSYC 185, 186
   b. LBST 70
   c. EDUC 198A
   d. EDUC 138
   e. PSYC 134
   f. EDUC 70
6. *Technology*
   a. LBST 75
7. *Liberal Studies Seminar Courses*
   a. LBST 10; Introduction to liberal studies major
   b. LBST 197; senior Capstone

## Concentrations

The following areas offer concentrations: art, English, environmental studies, global cultural studies, history, mathematics, music, musical theatre, social science, Spanish, and U.S. cultures.

For course requirements for the concentrations or for information about modified breadth requirements related to specific second majors, contact the liberal studies program director.

## Urban Education

The urban education minor provides Santa Clara undergraduate students seeking to become K–12 teachers with the basics in educational theory, urban school observation and reflective experiences, and the sociological and psychological foundations needed to embark on teaching internships upon graduation. Any undergraduate student can complete a minor in urban education. See course descriptions and requirements.

## LIBERAL STUDIES COURSES

***10. Introduction to Liberal Studies***

This course introduces undergraduates to the profession of teaching. Students will engage in readings and discussions about the role of the teacher and the responsibilities of the professional educator. Topics in this course represent the broad dimensions of the teaching profession and enable students to relfect on the reasons they have chosen this career path. Students are prepared in LBST 20 for what they will encounter throughout the liberal studies major, including initiating their personal LBST portfolios. LBST 10 should be taken as early as possible in the liberal studies program. (4 units)

### *70. Movement for Children*

Learn the movement concepts and skill themes central to any physical education program for children. Develop sound instructional approaches for teaching physical education, dance, and athletics and for creating kinesthetic lesson plans to teach all academic subjects. We will explore developmentally appropriate themes and activities that foster the interaction of physical, social, cognitive, and motor learning and will learn movement analysis techniques. Students will be asked to engage in a number of teaching simulations and will also work with children. Movement lab included. (4 units)

### *75. Technology and Learning*

Examination of the relationship between learning and technology to acquire and develop lifelong learning skills. Hands-on introduction to the computer, multimedia stations, and the Internet as learning tools and analysis of the impact of technology on society and learning. (4 units)

### *134. Psychology of Education*

Psychological principles on which effective classroom practices can be based. Human growth and development, learning theory and practice, motivation and management, effective instruction, and evaluation. Development of psychological case studies as part of the field experience. Also listed as PSYC 134. (5 units)

### *197. Senior Seminar*

Integration of methodological and epistemological features distinctive to the humanities, social sciences, and physical sciences using collaborative research methods. Examination of an issue of concern to U.S. elementary and secondary education. Open only to senior liberal studies majors, senior EFTP students, or senior urban education minors. Students enrolled in LBST 197 must have completed or be enrolled concurrently in EDUC 198A. (5 units)

## DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

*Professor Emeritus:* Paul R. Halmos
*Professors:* Gerald L. Alexanderson, José Barría, Jean J. Pedersen
*Associate Professors:* Glenn Appleby, Robert A. Bekes *(Chair)*, Frank A. Farris, Leonard F. Klosinski, Daniel N. Ostrov, Edward F. Schaefer, Richard A. Scott, Dennis C. Smolarski, S.J., Nicholas Q. Tran, Tamsen Whitehead
*Assistant Professors:* Aaron A. Diaz, Byron L. Walden
*Senior Lecturers:* Peter Ross, Nedra Shunk
*Michael and Elizabeth Valeriote Professor:* Gerald L. Alexanderson

The Department of Mathematics and Computer Science offers major programs leading to the Bachelor of Science in Mathematics or the Bachelor of Science in Computer Science (Mathematics), as well as required and elective courses for students majoring in other fields. Either major may be pursued with any of three principal goals: preparation for graduate studies leading to advanced degrees in mathematics, computer science, statistics, operations research, or other fields; preparation for secondary school teaching of mathematics or computer science; or preparation for a career in research in business, industry, or government. The major in mathematics may be taken with an emphasis in applied mathematics or actuarial mathematics. Minors in mathematics or computer science are also available.

For a description of the master's degrees in applied mathematics and computer engineering offered by the School of Engineering, see the *School of Engineering Graduate Programs Bulletin.*

Students interested in careers in secondary education in mathematics should consult with the department chair early in their academic program.

Departmental policy does not permit the use of a single upper-division course in the Department of Mathematics and Computer Science to satisfy requirements for two majors or minors.

## REQUIREMENTS FOR THE MAJOR AND MINOR

For the major in either mathematics or computer science, at least four of the required upper-division courses in the major must be taken at Santa Clara.

### Bachelor of Science Degree in Mathematics

In addition to completing the University Core Curriculum and College requirements for the Bachelor of Science degree, candidates for the B.S. in Mathematics must complete the following requirements:

1. MATH 10 (or demonstrated equivalent proficiency in computer programming), 11, 12, 13, 21, 52, 53. MATH 22, though not required, is highly recommended.
2. Seven upper-division courses in mathematics, two of which must be MATH 102 and either 111 or 176 (or both). MATH 111 should be taken by students planning to do graduate work in mathematics; 176 is more suitable for students planning work in computer science or other applied areas. Students planning to undertake graduate studies in pure mathematics should plan to take, in addition to 102 and 111, MATH 105, 112, 113, and 154; students planning to undertake graduate studies in applied mathematics should complete the emphasis in applied mathematics and take MATH 105, 144, 154, and 155.
3. PHYS 31 and 32, with the associated laboratory section for PHYS 32. Students with a special interest in the application of mathematics in the social sciences or economics may substitute ECON 170, 171, or 177 for PHYS 32. Students planning to teach in secondary schools may substitute, with approval of the department chair, PHYS 20 and 21 for PHYS 31 and 32.
4. Completion of a small portfolio representing some of the student's accomplishments in mathematics

### Bachelor of Science Degree in Computer Science (Mathematics)

In addition to completing University and College requirements for the Bachelor of Science degree, candidates for the B.S. in Computer Science (Mathematics) must complete the following courses:

1. MATH 10, 11, 12, 13, 21, 22, 52, 53, 60, 61, 163
2. One course chosen from MATH 161, 166, or 167
3. Two upper-division mathematics courses on the following list and two upper-division mathematics courses not on the list: MATH 144, 161, 162, 164, 165, 166, 167, 168, 169, 176, and 177; though not required, MATH 122 is highly recommended.
4. PHYS 31 and 32, with the associated laboratory section for PHYS 32
5. COEN 20, ELEN 21, 21L, COEN 177, and one additional COEN upper-division course
6. One additional upper-division course, either in COEN or from the list of upper-division mathematics courses in (3.) above
7. Completion of a small portfolio representing some of the student's accomplishments in computer science

Students are encouraged to select one of the following areas of focus to guide their choices of upper-division courses:

- Foundations: MATH 161, 176, 177, COEN 173
- Numerical computation: MATH 144, 165, 166, COEN 145
- Software: MATH 161, 169, COEN 174, COEN 176 or 178
- Graduate school preparation: MATH 166, 176, 177, COEN 175

Other areas of focus (with corresponding courses) may be developed in consultation with an academic advisor.

### Minor in Mathematics or Computer Science

The minor in mathematics requires completion of MATH 11, 12, 13, 21; 52 or 53; and three upper-division courses with no more than one course selected from 161–169.

The minor in computer science requires completion of MATH 10 and 61; 12 or 51; COEN 20 and ELEN 21; three courses selected from 144, 161–169, and 176–177.

## EMPHASIS IN APPLIED MATHEMATICS

The Department of Mathematics and Computer Science offers a program providing an emphasis in applied mathematics for students who wish to prepare themselves for (1) careers in industry, or (2) graduate work in applied mathematics. The choice of program requirements was made in consultation with past graduates who have indicated the theoretical and technical needs for success "on the job." Participation in the program is noted on the student's transcript. All students in the program must complete the University and College requirements for a B.S. in Mathematics, and in particular:

1. MATH 22, 102, 122, 123, 166, 176
2. Two courses from the following: MATH 144, 155, 164, 165, 178, or an approved alternate

Advanced computer science courses will not be substituted for the above requirements.

Full descriptions of the program may be obtained from the chair of the Department of Mathematics and Computer Science.

## EMPHASIS IN ACTUARIAL MATHEMATICS

Actuarial Mathematics is the study and practice of the mathematics of the insurance business, which is a chief employer of students with strong mathematics backgrounds. The Department of Mathematics and Computer Science offers a program providing a more specialized emphasis in actuarial mathematics for students who wish to prepare themselves for careers in this field, and in particular, for the initial examinations required for employment as an actuary. Participation in the program is noted on the student's transcript. All students in the program must complete University and College requirements for a B.S. in Mathematics with the applied mathematics emphasis described above, except that MATH 164 is required, along with BUSN 40 and 41. (ECON 11, 12, 13, and 115 are recommended when possible.)

Full descriptions of the program may be obtained from the chair of the department.

## PREPARATION IN MATHEMATICS FOR ADMISSION TO TEACHER CREDENTIAL PROGRAMS

The State of California requires that students seeking a credential to teach mathematics or computer science in California secondary schools either pass a subject-area examination or successfully complete a state-approved Subject-matter Preparation Program in mathematics. The secondary teaching credential additionally requires the completion of an approved credential program which can be completed as a fifth year of study and student teaching or through an undergraduate summer program internship. The Department of Mathematics and Computer Science offers a state-approved program that satisfies the subject matter competency requirement for teaching mathematics at the secondary level. The mathematics subject-matter program satisfies the requirements for a degree in mathematics but includes some significant modifications. These include:

1. MATH 100, 101, 102, 122, 170, 176, either 175 or 178, and two other upper-division courses from an approved list
2. EDUC 98B or 198B, and 138 or 163
3. a U.S. Constitution course and COMM 20

In addition, students must complete, over the course of their undergraduate program, 100 hours of related field work and an individual portfolio to be reviewed by the subject-matter preparation program coordinator. Because the program requirements are very specific, students who are contemplating secondary teaching should contact the coordinator in the Department of Mathematics and Computer Science as early as possible.

## HONORS PROGRAM

The Department of Mathematics and Computer Science maintains a program for the discovery, encouragement, and development of mathematical talent among undergraduates. This program includes special sections, seminars, individual conferences, and directed study guided by selected faculty members. Students are also encouraged to participate actively in research projects directed by faculty. (Please note that this program is not affiliated with the University Honors Program.)

## LOWER-DIVISION COURSES

*Note: A grade of D in a prerequisite course in the calculus sequences (MATH 11–21; MATH 30–31) indicates a student is not adequately prepared for further work based on that course material. Students who receive a grade of D in the prerequisite course are therefore strongly advised not to continue with the next course until they have successfully mastered the prerequisite material. For further information, consult the mathematics faculty.*

*For courses with additional fees, see the* Undergraduate Schedule of Classes.

### *3. Introduction to Computing and Applications*

This course provides an overview of the history, uses, limitations, and social and ethical implications of computers, including the Internet and the World Wide Web. Students will solve problems by organizing a set of steps necessary for a solution and deciding how to proceed at each step. Computer laboratory activities enable students to practice what they study and to learn to use technology well. Discussions, readings, and writing assignments encourage students to think critically about issues related to technology. (4 units)

### *6. Finite Mathematics for Social Science*

Introduction to finite mathematics with applications to the social sciences. Sets, logic, combinatorial problems, probability, vectors, and matrices. (4 units)

### *7. Calculus for Social Science*

Introduction to differential and integral calculus with applications to the social sciences. Only one of MATH 7, 11, or 30 may be taken for credit. (4 units)

### *8. Introduction to Statistics*

Elementary topics in statistics chosen from descriptive statistics, probability, random variables and distributions, sampling, estimation, hypothesis testing, regression, and correlation. *Prerequisite: MATH 6 or equivalent.* (4 units)

### *9. Precalculus*

College algebra and trigonometry for students intending to take calculus. Does not fulfill the University Curriculum requirement; units do not apply toward the total required for graduation. *Prerequisite: Permission to enroll from the instructor.* (4 units)

### *10. Introduction to Computer Science*

Introduction to computer science and programming. Structured programming techniques using C++, machine structure, elementary algorithms, and data structures. This course also addresses the ethical and societal dimensions of computers and technology. Primarily (but not exclusively) for majors in computer science, mathematics, and physical sciences. MATH 10 may not be taken for credit if the student has received credit for a course in C++ or Java. *Prerequisite: MATH 11 (may be taken concurrently).* (4 units)

### *11. Calculus and Analytic Geometry I*

Differentiation and applications, introduction to integration. Only one of MATH 7, 11, or 30 may be taken for credit. *Prerequisite: Four years of high school mathematics (including trigonometry) or satisfactory grade in MATH 9.* (4 units)

### *12. Calculus and Analytic Geometry II*

Continuation of 11. Methods and applications of integration, transcendental functions. Only one of MATH 12 or 31 may be taken for credit. *Prerequisite: MATH 11 or equivalent.* (4 units)

### *13. Calculus and Analytic Geometry III*

Polar coordinates, parametric equations, vector functions, partial derivatives. *Prerequisite: MATH 12 or equivalent.* (4 units)

### *21. Calculus and Analytic Geometry IV*

Infinite series, multiple integrals, line integrals, Green's theorem. *Prerequisite: MATH 13 or equivalent.* (4 units)

### *22. Differential Equations*

Use of series, numerical, and Laplace transform methods in solving differential equations. Applications. Only one of MATH 22 and AMTH 106 may be taken for credit. *Prerequisite: MATH 21.* (4 units)

### *30. Calculus for Business I*

Differentiation and its applications to business, including marginal cost and profit, maximization of revenue, profit, utility, and cost minimization. Natural logarithms and exponential functions and their applications, including compound interest and elasticity of demand. Study of the theory of the derivative normally included in MATH 11, except trigonometric functions not included here. Only one of MATH 7, 11, or 30 may be taken for credit. Non-business majors must have permission from the Department of Mathematics and Computer Science in order to enroll in this course. *Prerequisite: three years of high school mathematics (excluding trigonometry) or satisfactory grade in MATH 9. (MATH 30 is not a suitable prerequisite for MATH 12.)* (4 units)

### *31. Calculus for Business II*

Integration and its applications to business, including consumer surplus and present value of future income. Functions of several variables and their derivatives; Lagrange multipliers and constrained optimization. Emphasis throughout the sequence on mathematical modeling, the formulation of practical problems in mathematical terms. Only one of MATH 12 or 31 may be taken for credit. *Prerequisite: MATH 30 or equivalent.* (4 units)

### *32. Mathematical Logic*

Informal and formal methods in elementary logic. Arithmetical representations of statement calculus. Boolean algebras of sets, statements, and electrical switches. For students in computer science and/or students planning to pursue further work in logic and foundations. *Recommended prerequisite for MATH 133.*

### *41. The Nature of Mathematics*

For liberal arts students. Topics chosen from the theory of numbers, combinatorics, geometry, and other suitable areas. Material will generally be presented in a historical setting that allows students to participate in the discovery and development of important mathematical ideas. Emphasis on problem solving and doing mathematics.

### *44. Mathematics for Elementary Teachers I*

Problem solving and logical thinking approach to whole numbers: their nature, counting, place value, computational operations, properties, and patterns. Intuitive two-dimensional geometry and measurement, especially metric. NCX†

† Exempted from challenge

### *45. Mathematics for Elementary Teachers II*

Problem solving and logical thinking approach to fractional numbers, integers, rational numbers, and real numbers: their nature, computational operations, properties, and patterns. Intuitive three-dimensional geometry and measurement, especially metric. Functions, relations, and graphs. *Prerequisite: MATH 44.* (4 units) NCX†

### *51. Discrete Mathematics*

Relations and operations on sets, orderings, elementary combinatorial analysis, recursion, algebraic structures, logic, and methods of proof. Also listed as COEN 19. (4 units)

### *52. Introduction to Abstract Algebra*

Groups, homomorphisms, isomorphisms, quotient groups, fields, integral domains; applications to number theory. (4 units)

### *53. Linear Algebra*

Vector spaces, linear transformations, algebra of matrices, eigenvalues and eigenvectors, and inner products. *Prerequisite: MATH 13.* (4 units)

### *60. Introduction to Scientific Programming*

This is a practical course in the methods used and skills required for writing and maintaining software for mathematical and scientific applications. It provides the opportunity for students to improve programming skills in preparation for MATH 61 and other courses. Special emphasis will be placed on the numerical features of Fortran-90 or other suitable languages. *Prerequisites: MATH 10 or an equivalent introductory course in a scientific language.* (2 units)

### *61. Data Structures*

Analysis of structures used for computer data storage (arrays, records, stacks, queues, linked lists, trees). Introduction to algorithms associated with various data types (sorting, searching, tree traversal, large integer arithmetic), and to general programming techniques (recursion, iteration). MATH 61 and COEN 9 cannot both be taken for credit. *Prerequisite: MATH 10.* (4 units)

### *90. Lower-Division Seminars*

Basic techniques of problem solving. Topics in algebra, geometry, and analysis. (4 units)

## UPPER-DIVISION COURSES

*Note: Although MATH 10 is not explicitly listed as a formal prerequisite, some upper-division courses suggested for computer science (mathematics) majors may presuppose the ability to write computer programs in some language. A number of upper-division courses do not have specific prerequisites. Students planning to enroll should be aware, however, that all upper-division courses in mathematics require some level of mathematical maturity. Those without a reasonable background in lower-division courses are advised to check with instructors before enrolling.*

*For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *100. Writing in the Mathematical Sciences*

An introduction to writing and research in mathematics. Techniques in formulating research problems, standard proof methods, and proof writing. Practice in mathematical exposition for a variety of audiences. Strongly recommended for mathematics and computer science majors beginning their upper-division course work. MATH 100 may not be taken to fulfill any mathematics or computer science upper-division requirements for students majoring in mathematics or computer science. (5 units)

† Exempted from challenge

### *101. A Survey of Geometry*

Topics from projective, advanced Euclidean, and non-Euclidean geometries. Symmetry. Offered in alternate years. (5 units)

### *102. Advanced Calculus*

Vector calculus, functions of several variables, elliptic integrals, line integrals, Stokes's theorem, and the divergence theorem. *Prerequisites: MATH 21 and 53.* (5 units)

### *103. Linear Algebra II*

Abstract vector spaces, dimensionality, linear transformations, isomorphisms, matrix algebra, Eigenspaces and diagonalization, Cayley-Hamilton Theorem, canonical forms, unitary and Hermitian operators, applications. *Prerequisite: MATH 53.* (5 units)

### *105. Theory of Functions of a Complex Variable*

Analytic functions. Cauchy integral theorems, power series, conformal mapping. Riemann surfaces. (5 units)

### *111. Abstract Algebra I*

Topics from the theory of groups. Offered in alternate years. *Prerequisites: MATH 52 and 53.* (5 units)

### *112. Abstract Algebra II*

Rings and ideals, algebraic extensions of fields, and the Galois theory. Offered in alternate years. *Prerequisite: MATH 111.* (5 units)

### *113. Topology*

Topological spaces and continuous functions. Separability and compactness. Introduction to covering spaces or combinatorial topology. Offered in alternate years. *Prerequisite: MATH 52, 53, or 102.* (5 units)

### *122. Probability and Statistics I*

Kolmogorov's axioms; conditional probability; independence; random variables; discrete and continuous probability distributions; expectation; moment-generating functions; weak law of large numbers; central limit theorem. *Prerequisite: MATH 21.* (5 units)

### *123. Probability and Statistics II*

Estimation and hypothesis testing. Maximum likelihood estimation, likelihood ratio tests, and sampling from the normal distribution. Applications. *Prerequisite: MATH 53 or permission of instructor and MATH 122.* (5 units)

### *133. Logic and Foundations*

Deductive theories. Theories and models. Consistency, completeness, decidability. Theory of models. Cardinality of models. Some related topics of metamathematics and foundations. Open to upper-division science and mathematics students and to philosophy majors having sufficient logical background. Offered in alternate years. *Prerequisite: MATH 32 or equivalent.* (5 units)

### *134. Set Theory*

Naive set theory. Cardinal and ordinal arithmetic. Axiom of choice and continuum hypothesis. Axiomatic set theory. Offered in alternate years.

### *144. Partial Differential Equations*

Linear partial differential equations with applications in physics and engineering, including wave (hyperbolic), heat (parabolic), and Laplace (elliptic) equations. Solutions on bounded and unbounded domains using Fourier series and Fourier transforms. Introduction to nonlinear partial differential equations. Offered in alternate years. *Prerequisite: MATH 21. Recommended: MATH 22 or AMTH 106.* (5 units)

### *153. Intermediate Analysis I*

Rigorous investigation of the real number system. Concepts of limit, continuity, differentiability of functions of one real variable, uniform convergence, and theorems of differential and integral calculus. Offered in alternate years. *Prerequisite: MATH 102.* (5 units)

### *154. Intermediate Analysis II*

Continuation of MATH 153. Offered in alternate years. *Prerequisite: MATH 153.* (5 units)

### *155. Ordinary Differential Equations*

Solutions to systems of linear differential equations. Behavior of nonlinear autonomous two-dimensional systems. Uniqueness and existence of solutions. Offered in alternate years. *Prerequisite: MATH 102.* (5 units)

### *161. Theory of Automata and Languages I*

Classification of automata, formal languages, and grammars. Chomsky hierarchy. Representation of automata and grammars, BNF. Deterministic and non-deterministic finite state automata. Regular expressions and languages. Push-down automata. Context-free languages. Context-sensitive grammars and linear bounded automata. Recursively enumerable languages. Turing machines; normal forms; undecidability. Offered in alternate years. *Prerequisites: MATH 52 and 61 or equivalent.* (5 units)

### *162. Theory of Automata and Languages II*

Continuation of MATH 161. Offered in alternate years. *Prerequisite: MATH 161.* (5 units)

### *163. Theory of Algorithms*

Preliminaries: measuring work done by algorithms. Nonnumerical algorithms: searching, sorting, graph spanning and traversal, string matching. Numerical topics: polynomial and matrix arithmetic. P and NP-completeness. *Prerequisites: MATH 51 or 52, and 61 or equivalent.* Also listed as COEN 179. (5 units)

### *164. Computer Simulation*

Techniques for generation of probability distributions. Computer models of queueing in inventory and scheduling. Simulation of economic systems. Monte Carlo methods for physical systems. Offered in alternate years. *Prerequisite: MATH 122 and the ability to program in some scientific language.* (5 units) NCX†

### *165. Linear Programming*

Algebraic background. Transportation problem. General simplex methods. Linear programming and theory of games. Numerical methods. Offered in alternate years. (5 units)

### *166. Numerical Analysis*

Numerical algorithms and techniques for solving mathematical problems. Linear systems, integration, approximation of functions, solution of nonlinear equations. Analysis of errors involved in the various methods. Direct methods and iterative methods. *Prerequisites: (1) The ability to program in some scientific language, (2) MATH 53 or permission of the instructor.* (5 units)

### *167. Switching Theory and Boolean Algebra*

Switching algebra and Boolean algebra. Minimization via Karnaugh maps and Quine-McCluskey, state compatibility and equivalence. Machine minimization. Faults. State identification, finite memory, definiteness, information losslessness. Offered in alternate years. (5 units)

### *168. Computer Graphics*

Systematic and comprehensive overview of interactive computer graphics such as mathematical techniques for picture transformations and curve and surface approximations. *Prerequisite: The ability to program in some scientific language.* MATH 53 recommended but not required. (5 units)

### *169. Programming Languages*

Comparative study of major classes of programming languages. Introduction to theoretical definitions of languages and run-time concerns, with emphasis on good points and deficiencies of various languages and on using the appropriate language for a given task. Programs written in several languages (e.g., LISP, COBOL, C, C++, Path-Pascal). Offered in alternate years. (5 units)

† Exempted from challenge

### *170. Development of Mathematics*

A selection of mathematical concepts with their historical context. *Prerequisite: Upper-division standing in a science major.* (5 units)

### *172. Problem Solving*

Use of induction, analogy, and other techniques in solving mathematical problems. Offered in alternate years. (5 units)

### *174. Differential Geometry*

Introduction to curves and surfaces. Frenet-Serret formulas, Gauss' Theorema Egregium, Gauss-Bonnet theorem. Offered in alternate years. *Prerequisite: MATH 53.* (5 units)

### *175. Theory of Numbers*

Fundamental theorems on divisibility, primes, congruences. Number theoretic functions. Diophantine equations. Quadratic residues. Partitions. Offered in alternate years. *Prerequisite: MATH 52.* (5 units)

### *176. Combinatorics*

Permutations and combinations, generating functions, recursion relations, Pólya counting theorem, the 12-fold way, and a selection of topics from combinatorial geometry, graph enumeration, combinatorial species, and algebraic combinatorics. (5 units)

### *177. Graph Theory*

Selected topics from planarity, connectedness, trees (enumeration), digraphs, graph algorithms, and networks. Offered in alternate years. (5 units)

### *178. Cryptography*

History, cryptanalysis, and running time analysis. Classical cryptosystems, RSA, DES, discrete log over finite fields and elliptic curves, stream ciphers and signatures. (5 units)

### *190. Upper-Division Seminars*

Advanced topics in algebra, geometry, or analysis. Research projects. May be repeated for credit. (1-5 units)

### *196. Advanced Topics*

Offered each year in an advanced area of mathematics not ordinarily covered in the regularly offered courses. Often an area of current interest. May be repeated for credit. (5 units)

### *198. Internship/Practicum*

Guided study related to off-campus practical work experience in computer science, mathematics, or statistics. Enrollment restricted to majors or minors of the department. *Prerequisite: Approval of a faculty sponsor.* (5 units)

### *199. Independent Study*

Reading and investigation for superior students under the direction of a staff member. This can be used only to extend, not to duplicate, the content of other courses. May be repeated for credit. (1–5 units)

## DEPARTMENT OF MODERN LANGUAGES AND LITERATURES

*Professors:* Rose Marie Beebe, Francisco Jiménez, Catherine R. Montfort, Victor B. Vari
*Associate Professors:* Josef Hellebrandt *(Chair)*, Andrew I. Rematore, Tonia Caterina Riviello, Gudrun Tabbert-Jones
*Assistant Professor:* Juan Velasco
*Senior Lecturers:* Elsa Li, Lucía Varona
*Fay Boyle Professor:* Francisco Jiménez
*Harold and Edythe Toso Professor:* Victor B. Vari

The Department of Modern Languages and Literatures offers courses in Chinese, French, German, Italian, Japanese, and Spanish. The courses are designed to help students achieve proficiency in both the oral and written language and to provide them with an understanding of the experiences, values, and traditions of those peoples whose languages are studied. Courses range from beginning language to linguistics, from an introduction to literary texts to advanced courses in literature and culture. All courses are open to any student with the requisite preparation.

### MAJORS AND MINORS

The Department of Modern Languages and Literatures offers the Bachelor of Arts degree with a major in French and Francophone, German, Italian, or Spanish Studies. An academic minor is available in French and Francophone, German, Italian, Japanese, or Spanish Studies. For particulars, see the entries on the individual languages.

### COURSES IN TRANSLATION

A number of courses in literature and culture offered by the department are taught in English and are open to any student. Some of these courses may be used as credit toward a major or minor in French and Francophone Studies, or a major or minor in German Studies or a minor in Japanese Studies. Consult the individual language listings for details.

### PREPARATION IN FRENCH AND SPANISH FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

*Coordinators:*
*French:* Catherine R. Montfort
*Spanish:* Rose Marie Beebe, Josef Hellebrandt

The state of California requires that students seeking a credential to teach French or Spanish in California secondary schools either pass a subject-area examination or successfully complete the state-approved Subject-Matter Preparation Program in the language to be taught. The teaching credential itself requires the completion of an approved credential program which can be completed as a fifth year of study with student teaching or through a summer program and internship in conjunction with the undergraduate preteaching program.

At this time, the only approved Subject-Matter-Preparation in effect is in Spanish. Therefore, students in French must pass the state-approved subject-area examination in the language to be taught for admission to a credential program.

The Subject-Matter Preparation program in French is currently being revised for approval by the state of California. Students interested in this program should consult with the department concerning the status of the program.

## LANGUAGE PLACEMENT

Students who have never studied the language in which they wish to enroll, or who have studied that language for one year in high school, should register for Language 1. Those who wish to continue in a language that they have studied for two years in high school should enter Language 2. Students with three or more years of study in a single language, those who wish to continue language study beyond the second language requirement, or those who feel following the formula would place them in a higher level course than their background warrants, should consult a member of the appropriate language faculty for placement advice.

Students having the necessary proficiency, as demonstrated by an interview with a member of the language faculty, may enroll in higher-numbered courses than those of the placement formula. Once proficiency has been established, lower-division students may enroll in upper-division courses with the permission of the instructor. Such courses will be counted as fulfilling major or minor requirements.

## PROFICIENCY EXAMINATIONS IN MODERN FOREIGN LANGUAGES

Students may fulfill their second language core curriculum requirement by successfully completing a proficiency examination in a modern foreign language at the level for the program of study. A fee is charged for this examination. Contact the department to make arrangements.

## COURSES EXEMPTED FROM CHALLENGE

Courses numbered 1 through 102 are not open to challenge; for courses numbered above 102, consult the individual listing.

## E. L. WIEGAND LEARNING CENTER

Course work is supplemented in some languages programs by activities in the interactive, multimedia E. L. Wiegand Learning Center. Specific requirements vary by course.

## CONVERSATION GROUPS

As an adjunct to many language courses, the department offers students the opportunity to participate in small conversation groups of six or eight students under the direction of a native speaker or an advanced major.

## STUDY ABROAD

Study abroad is a valuable enhancement of the undergraduate experience and is particularly recommended for students pursuing a major or minor in a foreign language. Early planning, in consultation with both the Office of International Programs and the student's foreign language advisor, is essential to ensure appropriate integration of the work done abroad into the student's program of study.

## CHINESE STUDIES COURSE DESCRIPTIONS

### *1. Elementary Chinese I*

Designed for those having no previous study of Mandarin Chinese. A proficiency-based course emphasizing communicative language skills (understanding, speaking, reading, and writing). Development of an understanding of Chinese culture. (4 units)

### *2. Elementary Chinese II*

Continuation of CHIN 1. (4 units)

### *3. Elementary Chinese III*

Completion of elementary Chinese. (4 units)

### *21. Intermediate Chinese I*

The first course in a three-part review of the fundamentals of spoken and written Mandarin Chinese. Progressive readings and exercises in conversation and composition. Development of an understanding of Chinese culture. *Prerequisite: CHIN 3 or equivalent.* (4 units)

### *22. Intermediate Chinese II*

Continuation of the review of Chinese structure, together with progressive development of all Chinese skills. Broadening appreciation of Chinese culture through reading and discussion. *Prerequisite: CHIN 21 or equivalent.* (4 units)

### *23. Intermediate Chinese III*

Completion of intermediate Chinese. *Prerequisite: CHIN 22 or equivalent.* (4 units)

### *100. Advanced Chinese I*

This course is aimed at expanding the student's vocabulary in written and spoken Chinese, and developing his or her ability to comprehend and use complex grammatical structures with ease. Course conducted in Chinese. *Prerequisite: CHIN 23 or equivalent.* (5 units)

### *101. Advanced Chinese II*

The second in a series of three courses, CHIN 101 is aimed at expanding the student's vocabulary in written and spoken Chinese, and developing his or her ability to comprehend and use complex grammatical structures with ease. Course conducted in Chinese. *Prerequisite: CHIN 100 or equivalent.* (5 units)

### *102. Advanced Chinese III*

This course completes the advanced Chinese series and is aimed at expanding the students' vocabulary in written and spoken Chinese and developing their ability to comprehend and use complex grammatical structures with ease. Course conducted in Chinese. *Prerequisite: CHIN 101 or equivalent.* (5 units)

## FRENCH AND FRANCOPHONE STUDIES MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the French and Francophone Studies major consists of a minimum of 40 quarter units of upper-division work in French and Francophone language, literature, and culture, including:

1. FREN 100 and 101 or their equivalents
2. At least one course in French or Francophone literature
3. Additional electives in French or Francophone Studies to total 40 quarter units chosen with the approval of the student's major advisor. One upper-division course in French literature or culture taught in English by a member of the Department of Modern Languages and Literatures may be included among the 40 quarter units required for the major as long as it contains a French component.

Recommended electives include courses in French or European history, comparative literature, art history, and linguistics. Students who choose to study abroad are required to take at least one upper-division class at Santa Clara University upon their return.

The minor in French and Francophone Studies requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in French, including FREN 100 and 101 or department-approved substitutes and at least one course in French or Francophone literature. One upper-division course in French literature or culture taught in English by a member of this department may be included among the 19 quarter units required for the minor as long as it contains a French component.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by members of this department. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of a French and Francophone Studies major or minor.

## COURSE DESCRIPTIONS

### *1. Elementary French I*

Designed for those having no previous study of French. A proficiency-based course emphasizing communicative language skills (understanding, speaking, reading, and writing). Development of an understanding of French and Francophone culture. Multimedia laboratory sessions required. (4 units)

### *2. Elementary French II*

Continuation of FREN 1. (4 units)

### *3. Elementary French III*

Completion of elementary French. (4 units)

### *21. Intermediate French I*

The first of two courses reviewing the fundamentals of spoken and written French. Readings in original prose. Development of an understanding of French and Francophone culture. *Prerequisite: FREN 3 or equivalent.* (4 units)

### *22. Intermediate French II*

Continuation of the review of the fundamentals of spoken and written French. Further appreciation of French and Francophone culture through readings and discussion of short stories and plays. *Prerequisite: FREN 21 or equivalent.* (4 units)

### *50. Intermediate French Conversation*

A course concentrating on the development of the students' ability to speak French. No auditors. *Prerequisite: FREN 22 or equivalent.* (4 units)

### *100. Advanced French I*

Emphasis on spoken French. Use of Internet resources to broaden appreciation of French and Francophone culture. Readings include a novel and a play. Required of all majors and minors. An essential course for studying abroad. *Prerequisite: FREN 22 or equivalent.* (5 units) NCX†

### *101. Advanced French II*

Introduction to literary analysis in poetry, prose, and drama. Required of all majors and minors. (May be taken concurrently with certain other upper-division courses.) *Prerequisite: FREN 100 or equivalent.* (5 units)

### *106. Advanced French Conversation and Composition*

Intensive work in French conversation and composition, focusing on everyday situations. No auditors. *Prerequisite: FREN 100 or equivalent.* (5 units) NCX†

### *108. French Business Culture and Institutions*

Basic French business terminology and practices. Business letter writing emphasized. Examination of French business institutions (agriculture, finance, advertising, transportation, etc.). Special emphasis on understanding the underlying cultural mores that make French business different from U.S. business. (5 units)

### *110. Introduction to French Culture and Civilization*

Cultural, political, economic, artistic, educational, and social aspects of France. (5 units)

### *111. Introduction to Francophone Studies: From the Caribbean to Vietnam*

Cultural, political, economic, educational, and social aspects of Francophone countries. Exploration through literary works and films of issues involving nationalism, race, gender, identity, and alienation. Geographic areas include the Caribbean, North Africa, sub-Saharan Africa, Quebec, and Vietnam. May be taken independently of FREN 110. (5 units)

### *113. Francophone Culture and Civilization: Black African Women Writers*

An introduction to literature written by Black African women writers. Through literature (interviews, personal testimonies, novels, autobiography) and film (documentaries, movies), students will witness the changing faces of Black Africa, from colonial times to the present, as seen through the eyes of women. (5 units)

### *115. Major Works of French Literature I*

Readings in French literature from its beginnings in the Moyen Age to the end of the 18th century. Rotated topics include the theme of love, the comic, the writer's relationship to societies, the emerging genre of the theatre, etc. (5 units)

### *116. Major Works of French Literature II*

Readings in French literature of the 19th and 20th centuries. Rotated topics include drama, the novel, literature and the arts, experimentation (literary and dramatic), etc. May be taken independently of FREN 115. (5 units)

† Exempted from challenge

### *120. Moyen Age*

Epic, lyric, and courtly literature of medieval France: Roland, l'amour courtois and the Troubadours, Chrétien de Troyes, Tristan et Iseut, Artur, the early theatre. (5 units)

### *130. Humanism and the Renaissance*

La Renaissance: readings in Rabelais, the Pléiade poets, and Montaigne. (5 units)

### *140. Le Grand Siècle: Theatre in the Age of Louis XIV*

Stress on classical tragedy and comedy in France, with special emphasis on the social and political context in which these genres were produced. Additional materials will be drawn from other writers of the 17th century such as Descartes, Pascal, Mme de La Fayette, and La Fontaine. (5 units) NCX†

### *150. The French Enlightenment*

This course will explore the major philosophical, literary, and artistic movements in France between the years 1715 (Louis XIV's death) and 1789 (the French Revolution), with an emphasis on their uneasy relationship to the social, political, and religious institutions of pre-revolutionary France. Texts by Montesquieu, Voltaire, Mme de Charrière, Mme de Graffigny, Rousseau, and others. (5 units)

### *160. 19th Century I: Romantic and Romantique*

Romantic literature: prose and poetry (Chateaubriand, Stendhal, Lamartine, Hugo, Balzac, Vigny, etc.). (5 units)

### *161. 19th Century II: Le réel et le symbolique*

Realist, Naturalist, and Symbolist literature (Baudelaire, Flaubert, Mallarmé, etc.). (5 units)

### *170. 20th Century I: Mémoires et Souvenirs*

Writings of la belle époque and entre deux guerres (Proust, Gide, Apollinaire, Dada, Surrealism, etc.). (5 units)

### *171. 20th Century II: The Existentialist Hero*

The engagée literature, the Anti-theatre, the New Novel, and current directions (Anouilh, Sartre, Camus, Ionesco, Robbe-Grillet, Tournier, etc.). (5 units)

### *172. Cinéma*

An examination of the evolution of style and theme in French cinema from its birth in 1895 to the present. Study of films by major directors (Renoir, Pagnol, Cocteau, Truffaut, Malle, Beineix, Diane Kurys). Main themes of French culture illustrated in the films. (5 units)

### *180. Seminars*

Variable topics in culture, literature, and film. May be retaken for credit. (5 units) NCX†

### *182. Women in French Literature: Authors and Characters*

Literary analysis of the woman question, formulated through the works of major French writers, both female and male, such as Marie de France, Mme de Lafayette, Choderlos de Laclos, Maupassant, Colette, Marguerite Duras, and Simone de Beauvoir. Readings set against the backdrop of the Monarchy, the French Revolution of 1789, and the Napoleonic regime emphasize an emerging feminist awareness that found expression not only through political activism but also through literature. (5 units)

### *183. 20th-Century French Women Writers*

The varied literary contributions of French and Francophone writers such as Colette, Simone de Beauvoir, Marguerite Duras, Elisabeth Badinter, Gabrielle Roy, Mariama Bâ; their differing perceptions of the traditional stereotypes of women and perspectives related to social class. Consideration of whether feminine literature has unique qualities. (5 units)

† Exempted from challenge

### *185. French Applied Linguistics*

Aspects of modern French linguistics (phonology, phonetics, morphology, syntax). Contrastive analysis. (5 units) NCX†

### *198. Directed Study*

Individually designed programs of advanced study. Normally restricted to seniors who are declared French and Francophone Studies majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as directed study. Written course outline must be approved by instructor and department chair in advance of registration. (1–3 units)

### *199. Directed Reading*

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.* (1–5 units)

## Literature and Culture in Translation

*Note: Literature and culture in translation courses are taught in English and cannot be used to fulfill the second language requirement. One course may be counted toward the French and Francophone Studies major or minor.* (5 units)

### *112. Francophone Culture and Civilization: Africa and the Caribbean*

A study of the political, social, and literary history of French-speaking Africa and the Caribbean (with a focus on Guadaloupe and Martinique). Explores the issues of identity crisis and cultural alienation in the works of leading writers. Conducted in English but contains a French component for French and Francophone Studies majors and minors. (5 units)

### *174. French Novels and Films: Culture, Gender, and Social Classes*

Analysis of classic French novels, ranging from Diderot's *The Nun* to Dura's *The Lover,* and films based on the same texts. Discussion of the adaptation of the novels to film and the characteristics of the novelist's world highlighted or ignored in the corresponding film. Of special interest is the question of whether feminine literature and films have unique qualities which distinguish them from the masculine tradition. Conducted in English but contains a French component for French and Francophone Studies majors and minors. (5 units)

### *184. 20th-Century French Women Writers in Translation*

The varied literary contributions of French and Francophone writers. Readings selected mainly from writers of the second half of the 20th century. Consideration of whether feminine literature has unique qualities. Conducted in English but contains a French component for French and Francophone Studies majors and minors. (5 units)

† Exempted from challenge

## GERMAN STUDIES MAJOR AND MINOR

In addition to the University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the German Studies major consists of a minimum of 40 quarter units of upper-division work in German language, literature, and culture, including GERM 100 and GERM 101 (Advanced German I and II) or their equivalents, as approved by the student's major advisor. Two upper-division courses in German literature, culture, art history, European history, or politics taught in English may be included among the 40 quarter units required for the major.

The minor in German Studies requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in German, including GERM 100 and GERM 101 or department-approved substitutes. One upper-division course in German literature, culture, art history, European history, or politics taught in English by a member of the Department of Modern Languages and Literatures may be included among the 19 quarter units required for the minor.

At least 20 of the upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the German Studies minor must be earned in courses taught by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of the German Studies major or minor.

## COURSE DESCRIPTIONS

### *1. Elementary German I*

Designed for those having no previous study of German. A proficiency-based course emphasizing communicative language skills (understanding, speaking, reading, and writing). Cultural information on German-speaking countries. (4 units)

### *2. Elementary German II*

Continuation of GERM 1. (4 units)

### *3. Elementary German III*

Completion of elementary German. (4 units)

### *5. German for Reading Knowledge*

Alternate to GERM 3 leading to the reading of scholarly articles in various fields of study. *Prerequisite: GERM 2 or equivalent.* (4 units)

### *21. Intermediate German I*

Review of German grammar, short stories, or essays on culture and civilization. Progressive exercises in conversation. *Prerequisite: GERM 3 or 5 or equivalent.* (4 units)

### *22. Intermediate German II*

Continuation of GERM 21. Accelerated readings, conversation, and writing. (4 units)

### *100. Advanced German I*

Advanced reading, composition, and conversation. Emphasis on conversation and career-oriented language. Required of all minors. *Prerequisite: GERM 22 or equivalent.* (5 units)

### *101. Advanced German II*

Reading of literary texts, composition, and discussion. Required of all minors. Completion or equivalent knowledge admits students to higher-numbered courses. *Prerequisite: GERM 100 or equivalent.* (5 units)

### *108. German Business Culture and Institutions*

Introduction to the language of business German. Insights into Germany's place in the global economy. The topics, language, and skill-building exercises offer an excellent preparation for students who, after two years of college-level German, plan to pursue careers in international companies and institutions. At the same time, the materials are appropriate for German majors or minors who want to gain insight into contemporary German culture and civilization. (5 units)

### *110. History of German Civilization*

Cultural history of the German-speaking countries from earliest times to 1945. *Prerequisite: GERM 100 or equivalent.* (5 units)

### *111. Contemporary German Civilization*

Geography, culture, education, politics, and the economy in the German-speaking countries since 1945. *Prerequisite: GERM 100 or equivalent.* (5 units)

### *130. The Classical Age*

Major works by Goethe and Schiller. (5 units)

### *140. 19th-Century Romanticism*

Philosophy of the Romantics. German fairy tale. Selected works by Kleist, Eichendorff, Heine, and Wagner. (5 units)

### *141. 19th-Century Realism*

Works by Büchner, Hebbel, Fontane, Marx, and Hauptmann. (5 units)

### *150. 20th-Century Novel*

Works by Kafka, Hesse, Thomas Mann, Christa Wolf, Böll, and others. (5 units)

### *151. 20th-Century Drama*

Plays by Brecht, Borchert, Frisch, and Dürrenmatt and Brecht's theoretical writings. (5 units)

### *160. The German Novelle*

Characteristic features of the *Novelle* as opposed to *Roman* and *Erzählung*. Examples from Theodor Storm to Thomas Mann. (5 units)

### *161. Survey of Lyric Poetry*

Introduction to the analysis of poetry. Numerous examples from all German literary periods beginning with 1600. (5 units)

### *174. German Novels and Films*

Various topics will be covered. (5 units)

### *180. Special Topics*

Variable topics in culture and literature. May be retaken for credit. (5 units) NCX†

### *182. Women in German Literature: Authors and Characters*

Works by and about German women. Authors studied include Droste-Hulshof, Böll, Wolf, Handke, Kaschnitz, Wander, and others. (5 units)

### *183. 20th-Century German Women Authors and Artists*

A selection from contributions by German women writers and film producers from the second half of the 20th century. (5 units)

### *198. Directed Study*

Individually designed programs of advanced study. Normally restricted to seniors who are declared German Studies minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as directed Study. Written course outline must be approved by instructor and department chair in advance of registration. (1–3 units)

### *199. Directed Reading*

Individually designed programs of advanced readings. Written permission of the instructor and department chair is required in advance of registration. (1–5 units) NCX†

† Exempted from challenge

## Literature in Translation

*Note: Literature in translation courses are taught in English and cannot be used to fulfill the second language requirement. One course may be counted toward the German Studies minor.*

### *115. German Literature in English Translation*

Reading and analysis of masterpieces of German literature written between 1750 and 1970. Selection dependent upon available translations. (5 units) NCX†

## ITALIAN STUDIES MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the Italian Studies major consists of a minimum of 40 quarter units of upper-division work in Italian language and literature, including ITAL 100 and 101 or their equivalents. All major programs must be approved by the student's faculty advisor. Recommended electives include courses in mythology, comparative literature, and Renaissance history.

The minor in Italian Studies requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in Italian, including ITAL 100 and 101 or department-approved substitutes.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by members of the Department of Modern Languages and Literatures. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of an Italian Studies major or minor.

## COURSE DESCRIPTIONS

### *1. Elementary Italian I*

Designed for those having no previous study of Italian. A proficiency-based course emphasizing the development of communicative language skills (understanding, speaking, reading, and writing). Development of an understanding of Italian culture. (4 units)

### *2. Elementary Italian II*

Continuation of ITAL 1. (4 units)

### *3. Elementary Italian III*

Completion of elementary Italian. (4 units)

### *15. Italian Conversation and Composition*

Intensive work stressing the skills of spoken and written Italian in everyday situations. *No prerequisite.* Summer course; offered only in Assisi, Italy. (4 units)

### *21. Intermediate Italian I*

Review of fundamentals of spoken and written Italian. Progressive readings reflecting Italian culture and values. Progressive exercises in conversation and composition. *Prerequisite: ITAL 3 or equivalent.* (4 units)

† Exempted from challenge

### *22. Intermediate Italian II*

Continuation of ITAL 21. (4 units)

### *62. Survey of Italian Culture and Civilization*

Highlights of Italian history, geography, art, music, and culture from their origins to the present. Summer course; offered only in Assisi, Italy. (4 units).

### *100. Advanced Italian I*

Composition, reading, and conversation. Required of all majors and minors. *Prerequisite: ITAL 22.* (5 units)

### *101. Advanced Italian II*

Continuation of ITAL 100. Required of all majors and minors. (5 units)

### *106. Advanced Italian Conversation*

Advanced work stressing the development of self-expression in Italian. *Prerequisite: ITAL 101 or equivalent and permission of the instructor.* (5 units) NCX†

### *110. Italian Civilization I*

Fundamental aspects of Italian history, art, and culture from their origins to the seicento. (5 units) NCX†

### *111. Italian Civilization II*

Continuation of ITAL 110. May be taken independently. From the *Settecento* to the present. (5 units)

### *112. Survey of Italian Culture and Civilization*

Highlights of Italian history, geography, art, music, and culture from their origins to the present. Summer course; offered only in Assisi, Italy. *Prerequisite: ITAL 100 or equivalent.* (5 units)

### *113. Cinema e Cultura*

A cultural portrait of modern Italy as reflected in its cinema. Films by Roberto Rossellini, Luchino Visconti, Vittorio De Sica, Michelangelo Antonioni, Federico Fellini, Francesco Rosi, Bernardo Bertolucci, Massimo Troisi, Ettore Scola, Mario Monicelli, and Marco Bellocchio illustrate cultural and intellectual change in the 20th century. *Prerequisite: ITAL 100 or equivalent.* (5 units)

### *120. Survey of Italian Literature I*

From its origin to the *Seicento.* (5 units)

### *121. Survey of Italian Literature II*

From the *Settecento* to the present. (5 units)

### *125. Colloquium: Italian Literature and Culture*

Topic varies. Study and discussion of selected themes in Italian literature and culture. May be retaken for credit. (5 units) NCX†

### *130. Dante, La Divina Commedia I*

*Inferno* and *Purgatorio.* (5 units)

### *131. Dante, La Divina Commedia II*

*Purgatorio* and *Paradiso.* (5 units)

### *140. Duecento, Trecento*

Emphasis on Dante's minor works, Petrarch's poetry, and Boccaccio's Decameron. (5 units)

### *150. Quattrocento, Cinquecento (Rinascimento)*

Important trends in the literary masterpieces of the Renaissance. Significant works of Ariosto, Tasso, Leonardo, Machiavelli, Lorenzo de Medici, Poliziano, Castiglione. (5 units)

### *160. Settecento*

Salient works of Vico, Goldoni, Parini, and Alfieri. (5 units)

† Exempted from challenge

### *170. Ottocento, I Promessi Sposi*

Discussion of the works of Foscolo, Leopardi, Manzoni's poetry. Carducci, Pascoli, and Verga. (5 units)

### *180. Novecento Italian Literature of the 20th Century*

Main trends in poetry, drama, and the novel from Pirandello to the present. (5 units)

### *182. 20th-Century Italian Women Writers*

Critical analysis of major works by leading women writers and the changing role of women in 20th-century Italian society: Grazia Deledda, Sibilla Aleramo, Elsa Morante, Natalia Ginzburg, Maria Bellonci, Laudomia Bonanni, Lalla Romano, Milena Milani, Francesca Sanvitale, Romana Petri, Isabella Bossi Fedrigotti, and Gina Lagorio. (5 units)

### *183. Women in Italian Cinema: The Impact of Globalization*

This course focuses on the films with a global viewpoint of numerous Italian film directors. We examine Italian masterpieces (even the black-and-white films of the 40s and 50s) with special focus on the changing aspects of global society and their impact on individuals, especially women. We also include films by women directors whose work may give us a contrasting vision of globalization and its enabling and challenging aspects. (5 units)

### *198. Directed Study*

Individually designed programs of advanced study. Normally restricted to seniors who are declared Italian Studies majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as directed study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

### *199. Directed Reading*

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.* (1–5 units)

## JAPANESE STUDIES MINOR

In addition to such lower-division courses as the student may need, the minor in Japanese Studies requires a minimum of 19 quarter units of upper-division work in Japanese, including JAPN 100, 101, and 102 or department-approved substitutes. One upper-division course in Japanese literature or culture taught in English by a member of the Department of Modern Languages and Literatures may be included among the 19 units required for the minor. Interested students should consult with the Japanese Studies section head.

At least 10 of the 19 upper-division units taken for the Japanese Studies minor must be earned in courses taught by members of this department. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of the Japanese Studies minor.

## COURSE DESCRIPTIONS

### *1. Elementary Japanese I*

Designed for those having no previous study of Japanese. A proficiency-based course emphasizing the development of communicative language skills (understanding, speaking, reading, and writing). Development of an understanding of Japanese culture. (4 units)

### *2. Elementary Japanese II*

Continuation of JAPN 1. (4 units)

### *3. Elementary Japanese III*

Completion of elementary Japanese. (4 units)

### *21. Intermediate Japanese I*

New grammatical structures and additional Chinese written characters. Progressive exercises to develop facility in conversation, reading, and composition. *Prerequisite: JAPN 3 or equivalent.* (4 units)

### *22. Intermediate Japanese II*

Continuation of JAPN 21. (4 units)

### *23. Intermediate Japanese III*

Completion of intermediate Japanese. *Prerequisite: JAPN 22.* (4 units)

### *100. Advanced Japanese I*

Continued practice in using complex grammatical structures. Reading and discussion of topics taken from a variety of sources. *Prerequisite: JAPN 23 or equivalent.* (5 units)

### *101. Advanced Japanese II*

Continuation of JAPN 100. *Prerequisite: JAPN 100 or equivalent.* (5 units)

### *102. Advanced Japanese III*

Completion of advanced Japanese. *Prerequisite: JAPN 101 or equivalent.* (5 units)

### *113. Readings in Japanese I*

Readings and discussions in Japanese of selected sociological, literary, and journalistic texts. (5 units)

### *114. Readings in Japanese II*

Continuation of JAPN 113. *Prerequisite: JAPN 113 or equivalent.* (5 units)

### *115. Readings in Japanese III*

Completion of readings in Japanese. *Prerequisite: JAPN 114 or equivalent.* (5 units)

### *198. Directed Study*

Individually designed programs of advanced study. Normally restricted to seniors who are declared Japanese Studies minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as directed study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

### *199. Directed Reading*

Individually designed programs of advanced readings. *Written permission of instructor and department chair required in advance of registration.* (1–5 units) NCX†

† Exempted from challenge

## Literature in Translation

*Note: Literature in translation courses are taught in English and cannot be used to fulfill the second language requirement. One course may be counted toward the Japanese Studies minor. (5 units)*

### *125. Colloquium: Japanese Literature and Culture*

Topic varies. Study and discussion of selected themes in Japanese literature and culture. May be retaken for credit. (5 units) NCX†

### *140. Modern Japanese Literature in Translation*

Major literary figures and trends from 1868 to the present. Particular attention to the interaction between traditional and modern social and literary values. (5 units)

### *150. Postwar Japanese Literature in Translation*

Major literary trends and representative fictional works since World War II that reflect Japan's transformation from a devastated Third World nation to a prosperous cosmopolitan society. (5 units)

### *160. Contemporary Japanese Literature in Translation*

An exploration of the transition from modern to postmodern trends in fiction written in Japan from the 1960s to the present. (5 units)

### *182. Japanese Women's Literature in Translation*

Introduction to representative works of fiction by major women writers. Traces the evolution of feminist consciousness in these writings. (5 units) NCX†

## SPANISH STUDIES MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the Spanish Studies major consists of a minimum of 40 quarter units of upper-division work in Spanish language, literature, and culture, including:

1. SPAN 100, 101
2. SPAN 175
3. At least one (but not more than three) from SPAN 120, 121, 130, 131
4. Additional electives in Spanish to total 40 quarter units, chosen with the approval of the Spanish advisor (Every program must include both Latin American and Spanish Peninsular literature or culture.)

Additional course limitations may apply, depending on career objectives. Courses in the history of Latin America and Spain are recommended.

The minor in Spanish Studies requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in Spanish, including SPAN 100 and 101 or department-approved substitutes and at least one course in Hispanic literature or culture.

† Exempted from challenge

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by members of the Department of Modern Languages and Literatures. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of a Spanish Studies major or minor.

## COURSE DESCRIPTIONS

### *1. Elementary Spanish I*

Designed for those having no previous study of Spanish. A proficiency-based course emphasizing the development of communicative language skills (understanding, speaking, reading, and writing). Development of an understanding of Hispanic culture. (4 units)

### *2. Elementary Spanish II*

Continuation of SPAN 1. (4 units)

### *3. Elementary Spanish III*

Completion of elementary Spanish. (4 units)

### *21. Intermediate Spanish I*

The first course in a three-part review of the fundamentals of spoken and written Spanish. Progressive readings and exercises in conversation and composition. Development of an understanding of Hispanic culture. *Prerequisite: SPAN 3 or three years of high school Spanish.* (4 units)

### *22. Intermediate Spanish II*

Continuation of the review of Spanish structure, together with progressive development of all Spanish skills. Broadening appreciation of Hispanic culture through reading and discussion of literary works. *Prerequisite: SPAN 21 or four years of high school Spanish.* (4 units)

### *23. Intermediate Spanish III*

Completion of intermediate Spanish. *Prerequisite: SPAN 22 or equivalent.* (4 units)

### *97. Community-Based Learning Practicum*

This course is for students enrolled in specific courses which have an integrated, reflective community-based learning component as part of the coursework. Includes eight weeks or participatory work in a community agency. Requirements: two hours per week at agency site over course of the placement. **Note**: Not all courses are eligible for enrollment in this practicum. (1 unit)

### *100. Advanced Spanish I*

Continued development of all Spanish skills at an advanced level. Special attention to composition. Systematic introduction to literary analysis. Required of all majors and minors. *Prerequisite: SPAN 23 or equivalent.* (5 units)

### *101. Advanced Spanish II*

Continued development of all Spanish skills and completion of the introduction to literary analysis begun in SPAN 100. Required of all majors and minors. *Prerequisite: SPAN 100 or equivalent.* (5 units)

*Prerequisites: Completion of SPAN 100 and 101 or evidence of equivalent preparation will admit students to higher-numbered courses.*

### *107. Advanced Spanish Composition*

Intensive systematic development of the forms of discourse in Spanish. *Prerequisites: SPAN 100 and 101 or equivalent.* (5 units) NCX†

### *108. Spanish for Spanish Speakers*

Development of the native Spanish speaker's writing and reading skills. *Prerequisite: Permission of the instructor.* (5 units) NCX†

† Exempted from challenge

### *110. Advanced Spanish Conversation*

Advanced work stressing the development of self-expression in Spanish. *Prerequisite: SPAN 101 or equivalent and permission of the instructor.* (5 units) NCX†

### *112. Mexican Culture*

Mexican literature, fine arts, history, and social developments, with particular attention to cultural values. (5 units)

### *113. The Revolution in Mexican Culture*

Readings and analysis of the works of Mexican writers and artists that interpret the Mexican Revolution of 1910 and reflect Mexican culture. (5 units)

### *120. Major Works of Spanish Literature I*

Readings in Spanish literature from the early forms of Spanish literature to the end of the 17th century. (5 units)

### *121. Major Works of Spanish Literature II*

Readings in Spanish literature of the 18th and 19th centuries. Continuation of SPAN 120. May be taken separately. (5 units)

### *122. The Spanish Picaresque Novel*

A study of the development of the Spanish picaresque novel and its influence on other European literatures. Key works, analyzed from a sociohistorical perspective, include *Lazarillo de Tormes* (1554), *El Guzmán de Alfarache* (1599), and *El Buscón* (1626). (5 units)

### *123. Siglo de Oro Drama*

A study of the Spanish *comedia* of the *Siglo de Oro*. Particular emphasis on the impact of Lope de Vega and the creation of a national theatre. Literary analysis of the comedias of the most representative Spanish dramatists of the period: Calderón de la Barca, Rojas Zorilla, Tirso de Molina, Ruiz de Alarcón, Guillén de Castro, and Lope de Vega. (5 units)

### *124. Realism in the 19th-Century Spanish Novel*

A study of the decline of Romanticism and the evolution of the Realist movement in 19th-century Spain. Special emphasis on the novels of Fernán Caballero, Alarcón, Galdós, and Valera. (5 units)

### *125. Colloquium: Spanish Literature and Culture*

Topic varies. Study and discussion of selected themes in Spanish Peninsular literature and culture. May be retaken for credit. (5 units) NCX†

### *130. Survey of Latin American Literature I*

Latin American literature from the pre-Columbian period to 1888. (5 units)

### *131. Survey of Latin American Literature II*

Latin American literature from 1888 to present. (5 units) NCX†

### *133. Mexican American Literature*

Reading, analysis, and discussion of Mexican American literature. Emphasis on the novel and short story. (5 units) NCX†

### *135. Colloquium: Latin American Literature and Culture*

Topic varies. Reading and discussion of selected themes in Latin American literature and culture. May be retaken for credit. (5 units) NCX†

### *136. Contemporary Latin American Short Story*

Examination of the Latin American short story from Quiroga to the present. Representative works reflecting the diverse cultural backgrounds and ideologies of the authors. (5 units)

† Exempted from challenge

### *137. Latin American Culture and Civilization*

Exploration of the basic factors that have molded and continue to shape the diverse lives and institutions of contemporary Spanish-speaking peoples of the Americas. (5 units)

### *140. Modern Latin American Literature I*

Reading, analysis, and discussion of the works of major Latin American writers of the early 20th century (e.g., Gallegos, Barrios, Prado, and Romero). (5 units)

### *141. Modern Latin American Literature II*

Reading, analysis, and discussion of the works of major Latin American writers of the late 19th and early 20th centuries. Emphasis on the novel. (5 units)

### *145. Mid-20th-Century Latin American Literature*

Reading, analysis, and discussion of the works of major Latin American writers from 1946 to 1962. Carpentier, Yáñez, Fuentes, and others. (5 units)

### *146. Contemporary Latin American Literature*

Reading, analysis, and discussion of the works of major contemporary Latin American writers—García Márquez, Vargas Llosa, and others. (5 units)

### *147. Cinema and the Novel in Contemporary Latin America*

Analysis of novels by major 20th-century Latin American writers and their representation in films. The impact of modernization, industrialization, and nationalistic and populist thought on the emergence of a distinctive film style, thematic trends, and literary genre conventions. (5 units)

### *148. 20th-Century Latin American Women Writers*

Reading, analysis, and discussion of novels and short fiction by major Latin American women writers of the 20th century (e.g., Bombal, Garro, Poniatowska, Allende, Valenzuela, and others). (5 units)

### *150. 20th-Century Spanish Literature I*

Major writers of Spain from 1898 to 1936. Particular emphasis on the Generation of 1898. (5 units)

### *151. 20th-Century Spanish Literature II*

Major writers of Spain from 1936 to the present. (5 units)

### *165. Cervantes: Don Quijote*

Cervantes' masterpiece, as a reflection of Spanish society during the Spanish Empire, an exemplar of Baroque art and a synthesis and culmination of narrative prose. (5 units)

### *175. Spanish Applied Linguistics I*

Introduction to the study of applied linguistics. Detailed scientific analysis of the phonology of modern Spanish. Contrastive analysis of Spanish and English sound systems. Required of all majors and of all prospective teachers of Spanish. (5 units)

### *176. Spanish Applied Linguistics II*

Detailed scientific analysis of the morphology and syntax of modern Spanish. Contrastive analysis within the Spanish structure system and between the Spanish and English structure systems. *Prerequisite: SPAN 175.* Required of all prospective teachers of Spanish. (5 units)

### *178. Teaching Methods in Spanish*

Practical and theoretical insights into the dynamics of teaching and learning Spanish at the secondary and post-secondary level. (5 units) NCX†

† Exempted from challenge

### *179. Technology for Teaching and Learning Spanish*

Preparation for the prospective Spanish teacher in the design, use, and evaluation of traditional and current technologies for teaching Spanish language and cultures. (5 units) NCX†

### *195. Spanish Translation*

Skills and strategies involved in the art of translation. A variety of texts (general, historical, cultural, technical, etc.) illustrate the different modes and nuances of translation. Students assigned special translation projects. *Prerequisite: SPAN 101 and permission of the instructor.* May be retaken for credit but will only be accepted once toward the Spanish Studies major or minor. (5 units) NCX†

### *198. Directed Study*

Individually designed programs of advanced study. Normally restricted to seniors who are declared Spanish Studies majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as directed study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

### *199. Directed Reading*

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.* (1–5 units) NCX†

## Literature in Translation

*Note: Literature in translation courses are taught in English and cannot be used as credit toward a Spanish Studies major, minor, or second language requirement.*

### *115. 20th-Century Mexican Literature in Translation*

Reading, analysis, and discussion of outstanding works by modern and contemporary Mexican writers. Emphasis on the novel. (5 units)

### *117. Latin American Literature in Translation*

Reading, analysis, and discussion of works of leading Latin American writers. Emphasis on contemporary novelists of South America. (5 units)

## MODERN LITERATURE AND CULTURE

*Note: Knowledge of a foreign language is not necessary for the following comparative course. It cannot be used to fulfill a major or minor requirement in a foreign language or to fulfill the second language requirement.*

### *180. International Cinema*

An interdisciplinary course treating film as a medium of cultural expression in China, England (or Australia or Canada), France, Germany, Italy, Japan, Latin America, Russia, and Spain.

† Exempted from challenge

## CENTER OF PERFORMING ARTS

*Director:* Jerald R. Enos
*Senior Laboratory Instructor:* Robert P. Bozina

The Center of Performing Arts includes the performance studies courses that have been approved for the University Core Curriculum, joint academic programs such as the Musical Theatre Minor, the Department of Music, and the Department of Theatre and Dance. It also sponsors the Music at Noon series and all public performances by the College's musical and theatrical organizations. In addition to these University and College uses, the Center serves as a community resource to advance the performing arts in the region.

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

## PERFORMANCE STUDIES

### *11. Performance and Culture I*

Interdisciplinary study of Western culture through the arts of music, theatre, and dance. Ancient Greece and Rome and the medieval world are the focus in this first of a series of three courses. (4 units)

### *12. Performance and Culture II*

Continuation of PERF 11. The Renaissance in Italy and England,17th-century France, the Enlightenment and Romanticism. (4 units)

### *13. Performance and Culture III*

Continuation of PERF 12. 19th and 20th century Romanticism, modern and contemporary eras. (4 units)

### *31/131. World Music Applied Instruction*

Semiprivate lessons in non-orchestral instruments representing a variety of world/folkloric cultures. (0.5 units)

### *32/132. World Music Applied Instruction*

Private lessons in non-orchestral instruments representing a variety of world/folkloric cultures. (0.5 units)

### *59. Music of the Caribbean*

An introduction to the music of the Caribbean Basin through historical, stylistic, and cultural survey. Although Cuba is emphasized—Rumba, Salsa, Son Cubano, Mambo, and Changui—an overview is developed of the entire region. Reggae (Jamaica), Calypso (Trinidad), Twoubado (Haiti), Merenque (Dominican Republic), and Plena (Puerto Rico) are among styles represented. Music is viewed in culture. Tradition, festivals, ritual, dance, religions, and sociopolitical developments are accented. Students learn fundamentals of playing basic percussion instruments (guiro, clave, maracas, etc.). (4 units)

### *60/160. World Music Lab*

Depending on student interests and experience, music from any of the world's regions may be emphasized: Caribbean, Pacific Islands, U.S. ethnic populations, etc. Aesthetic criteria are examined and technical features studied. Objective is participation in music-making, as it occurs, in various world populations. *Prerequisite: Permission of instructor.* (2 units)

### *61/161. Music at Noon*

This class is organized around the Music at Noon series of concerts, lectures, and discussions. Open to nonmajors. (1 unit)

### *62/162. African American Dance History*

Exploration of African American dance's contribution to U.S. culture from slavery through the present. How minstrel stereotypes, jazz dance sources, black concert dance, and hip-hop reflect racial and social realities in America. (5 units)

### *71. Music in American Culture*

A survey of music generated by America's diverse populations, including Latino, African American, Native American, Cajun, Appalachian, and Asian. Open to nonmajors. (4 units)

### *79. Music in American Culture II*

A historical survey of rock and roll, jazz, and bluegrass, focusing on the varieties of music generated by America's patchwork culture. (4 units)

### *164. History of American Musical Theatre*

A cultural look at musical theatre as an American art form, which has its roots in vaudeville, burlesque, and minstrel shows. (5 units)

### *180. Musical Theatre Production*

Gives students the opportunity to perform in a musical theatre production workshop which covers the study of songs and scenes from a wide variety of musicals. *Prerequisites for majors: THTR 20, THTR 21, DANC 46 (THTR 24, THTR 26, and DANC 40 recommended). Prerequisites for minors: THTR 20, THTR 123 in addition to Dance, Music, and Performance Studies requirements.* (5 units)

## MINOR IN MUSICAL THEATRE

The musical theatre minor is designed for students interested in an active educational experience in this uniquely American art form. Students take courses from the three areas of study in musical theatre: acting, dance, and music. After completing these courses, students participate in a Capstone Course (Musical Theatre Production) that integrates the three disciplines. The Capstone Course (PERF 180) is designed to showcase the skills and talents developed by the musical theatre minor.

The minor in musical theatre requires completion of the following courses:

### Dance

40. Jazz Dance I (41 or 42 may be substituted with permission of instructor)
46. Modern Dance I (47 or 48 may be substituted with permission of instructor)
155. Musical Theatre Dance Styles, or one course in advanced ballet, jazz, or modern from DANC 140, 141, 142, 145, 146, 147,148

### Music

30. Beginning Piano
33. Beginning Voice
51. Musicianship I
51A. Musicianship I lab

### Performance Studies

164. History of American Musical Theatre
180. Musical Theatre Production

### Theatre

20. Acting I
123. Acting Styles IV: Musical Theatre

## DEPARTMENT OF MUSIC

*Professor:* Hans C. Boepple *(Chair)*
*Associate Professors:* Teresa McCollough, Nancy Wait-Kromm

The Department of Music at Santa Clara University is committed to the education of the whole person: intellectual, emotional, physical, and spiritual. The goal of the Department of Music is to provide an intellectual and stimulating artistic environment, which fosters individual expression and creativity through the study of music and musical performance. Inasmuch as music is a fundamental characteristic of the human experience and an important component of the liberal arts education within the context of a Jesuit university, the curriculum is designed to provide students of diverse backgrounds with the skills necessary not only to understand and to perform music but also to appreciate music's role in human history and its potential to enhance the lives of all people.

The Bachelor of Arts in Music can provide preparation for many career options. Classes providing essential skills for the comprehension and performance of music are offered alongside courses designed to create an appreciation for music's changing role in our communities. Graduates in music have pursued careers in musical performance, pedagogy, theory, musicology, and arts administration, as well as careers outside of music in medicine, law, engineering, business, and the humanities. The Department of Music eagerly supports all majors and minors who find the discipline, creativity, and spirituality inherent in the study of music to be a valuable part of their education and their life goals.

### REQUIREMENTS FOR THE MAJOR IN MUSIC

***Course Requirements*** Students working toward a Bachelor of Arts degree in Music, in addition to completing the University Core Curriculum and College requirements in their major, must complete the following courses: MUSC 51-54, MUSC 51A-56A, MUSC 55, MUSC 73, MUSC 151, MUSC 151A, MUSC 152, MUSC 155, MUSC 156, MUSC 170-173, and MUSC 199F.

***Private Instruction and Ensemble Requirement*** Every quarter, all declared music majors must be enrolled in private instruction and one of these ensembles: University Orchestra, Concert Choir, Jazz Ensemble.

***Additional Requirements*** Music majors must be enrolled in MUSC 37 until the Keyboard Proficiency Exam is passed. Majors must also be enrolled in MUSC 38 until the Technology Proficiency Exam is passed.

## REQUIREMENTS FOR THE MINOR IN MUSIC

Students working toward a minor in music, in addition to completing the University Core Curriculum and College requirements in their majors, must complete the following courses: MUSC 51-53, MUSC 51A-53A, MUSC 73, two courses from MUSC 170-173, and MUSC 152.

***Private Instruction and Ensemble Requirement*** All declared music minors must complete six quarters of private instruction and six quarters of ensemble experience: University Orchestra, Concert Choir, Jazz Ensemble.

### Music Honors Program

The Department of Music awards honors at graduation to music majors who have satisfactorily completed the Music Honors Program. Designed as a rigorous course of study for students who wish to attain a higher level of achievement, the honors sequence can be taken in performance, composition, theory, or music history, and presupposes academic as well as musical excellence. A minimum GPA of 3.0 overall and 3.5 in all music courses, including applied lessons, is required.

Students interested in the Music Honors Program should consult the chair of the Music Department early in their tenure at Santa Clara University, since application is made during the spring quarter of the candidate's sophomore year. Working in conjunction with a faculty advisor, a music honors candidate develops a proposal for a project to be undertaken with close faculty supervision and to be completed by the end of his/her senior year. Music honors may be pursued in a single area of specialization or in a combination of areas in consultation with the department chair.

### Performers Certificate for Distinguished Musical Performance

Established in 1980 by the Music Department faculty, the Performers Certificate is awarded on a non-periodic basis to a student demonstrating exceptional accomplishment in musical performance or composition, especially on the basis of the student's Senior Recital.

### American Choral Directors Association National Choral Student Award

This award is given to a student who has been involved in choral music in the following ways: participated continuously in choral ensembles, provided service to the ensemble and conductor, demonstrated a high degree of choral proficiency and music literacy, and contributed to the advancement of choral singing at the University.

### Arrigo and Catherine Descalzi Prize

Established in 1990 in honor of Arrigo and Catherine Descalzi, this award is presented to the senior music student who, in the judgment of the Music Department faculty, best demonstrates artistic growth and dedication to the art of music.

### Department of Music Scholarships

Partial tuition and private lesson scholarships are available to qualified students by audition. Details of requirements and auditions can be procured from the Music Department office.

## MUSIC COURSE DESCRIPTIONS

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes. *For additional courses, see Center of Performing Arts: Performance Studies.*

### Music Theory and Composition

#### *51. Musicianship I*

An introductory course in the rudiments of music: notation, scales, intervals, chords, rhythm, and meter. Required lab (MUSC 51A) two hours/week to develop sight singing and aural skills. *Prerequisite: MUSC 30 or equivalent or permission of instructor.* (4 units)

#### *52. Musicianship II*

Continuation of MUSC 51. Introduction to part writing: figured bass and harmonization. Score analysis. Ear-training lab (MUSC 52A) required. *Prerequisite: MUSC 51 or permission of instructor.* (4 units)

#### *53. Musicianship III*

Continuation of MUSC 52. Further instruction in part writing up to secondary dominants. Score analysis. Ear-training lab (MUSC 53A) required. *Prerequisite: MUSC 52 or permission of instructor.* (4 units)

#### *54. Musicianship IV*

Continuation of MUSC 53. Study of modulation, chromaticism, and late-19th-century practices. Ear-training lab (MUSC 54A) required. *Prerequisite: MUSC 53 or permission of instructor.* (4 units)

#### *55A and 56A. Musicianship Labs*

Continuing labs, two hours/week, to develop sight singing and aural skills, to be taken sequentially after MUSC 54/54A. Please note that these labs no longer have a corresponding four-unit course. *Prerequisite for 55A: MUSC 54A. Prerequisite for 56A: MUSC 55A.* (2 units)

#### *55. Form and Analysis*

Detailed study of musical structure and style: analysis of repertory from the 17th to the 20th century. Open to nonmajors with permission of instructor. (4 units)

#### *151. Instrumentation/Arranging*

An exploration of orchestration and arranging for all instruments and voice. Conducting lab (MUSC 151A)required. Open to nonmajors with permission of instructor. (5 units)

#### *155. 20th-Century Theory*

Continuation of MUSC 54. Study of 20th-century techniques and styles including bitonality, atonality, serialism, and other contemporary procedures. *Prerequisite: MUSC 54 or permission of instructor.* (5 units)

#### *156. Counterpoint*

Continuation of MUSC 155. Introduction to tonal counterpoint including 18th-century techniques and forms. *Prerequisite: MUSC 155 or permission of instructor.* (5 units)

## Music History and Literature

### *70. Introduction to Music*

An overview of Western musical history from the 17th century to the present. Explorations of genres, styles, forms, and musical techniques as they influenced and were integrated into each musical period. Designed for nonmajors. (4 units)

### *73. Survey of Music*

General survey of Western music history and literature; designed for music majors. Open to nonmajors with permission of instructor. (4 units)

### *170. Music History I: Antiquity Through Renaissance*

Study of the historical development of Western music from its beginnings through the late madrigal (including early Monteverdi) and the nascent social/cultural underpinnings of opera, i.e. commedia dell'arte, intermedii, etc. (1580) Emphasis on the evolution of style and the analysis of significant works. *Prerequisite: MUSC 54 or permission of instructor.* (5 units)

### *171. Music History II: High Baroque and Classical*

Continuation of Western music survey: Baroque and Classical periods, from experimentation leading to opera (1580s) through the death of Mozart (1791). *Prerequisite: MUSC 54 or permission of instructor.* (5 units)

### *172. Music History III: Romantic*

Continuation of Western music survey from very late Haydn and Beethoven through German decadence following Wagner and the beginnings of Parisian avant-garde (1880/90). *Prerequisite: MUSC 54 or permission of instructor.* (5 units)

### *173. Music History IV: Modern*

Continuation of Western music survey from Debussy to the present. *Prerequisite: MUSC 54 or permission of instructor.* (5 units)

## Special Topics

*Note: Students under previous curricula must consult with the department chair for adjustments in requirements.*

### *66/166. Opera Theatre*

Instruction in operatic technique and literature; performance, score-reading, ensemble, etc. Open to nonmajors. (2 units)

### *152. Music Elective*

Required elective for all music majors and minors, offered every year, organized around various topics and issues of interest to the faculty and students. Open to non-majors with permission of instructor. (5 units)

## Applied Music: Class Instruction

### *30. Beginning Piano Class*

Introductory instruction in piano. Class limited to 16 students. Open to nonmajors. (4 units)

### *32. Beginning Guitar Class*

Examination of essential elements required to play guitar in the classical style, including fundamental principles of technique, sight-reading, pedagogic repertoire, history, and literature. May be repeated for credit. Open to nonmajors. (4 units)

### *33. Beginning Voice Class*

Application of basic vocal techniques to develop singing facility. Practical experience in performing. May be repeated for credit. Open to nonmajors. (4 units)

### *34. Intermediate Voice Class*

Continuation of MUSC 33, focusing on more advanced approaches to vocal technique and repertoire. May be repeated for credit. *Prerequisite: MUSC 33 or permission of instructor.*

### *37. Keyboard Proficiency Class*

For music majors only. Preparation for the Keyboard Proficiency Examination. (One contact hour per week/1 unit only)

### *38. Technology Proficiency Class*

For music majors only. Preparation for Technology Proficiency Examination. (One contact hour per week/1 unit only)

### *169. Musical Composition Seminar*

A seminar to encourage, educate, and inspire the production of new musical compositions. Development of musical skills, analysis, and discussion of music from the 1940s to the present will be covered. *Prerequisite: MUSC 53 or permission of instructor.* (5 units)

## Applied Music: Private Instruction

*Note: An additional fee is charged for private instruction and studio classes.*

Private applied instruction on all instruments and voice is available in the Department of Music. Practice rooms are available to all students enrolled in private instruction. Nine private lessons are given each quarter. Nonmajors may sign up with permission of the instructor. Where applicable, students may be required to register simultaneously in their instrument or voice studio class; to be arranged by the instructor. May be repeated for credit. Open to nonmajors. (1/2 unit or 1 unit/quarter)

***1/101. Piano***

***2/102. Organ***

***3/103. Harpsichord***

***4/104. Voice***

***5/105. Violin***

***6/106. Viola***

***7/107. Violoncello***

***8/108 Contrabass***

***9/109. Flute***

***10/110. Oboe***

***11/111. Clarinet***

***12/112. Bassoon***

***13/113. French Horn***

***14/114. Trombone***

***15/115. Tuba/Euphonium***

***16/116. Trumpet***

***17/117. Saxophone***

***18/118. Percussion***

***19/119. Guitar***

***20/120. Harp***

***21/121. Composition***

***22/122. Choral Conducting***

***23/123. Instrumental Conducting***

***24/124. Jazz Piano***

***25/125. Jazz Guitar***

***199A. Junior Recital***

***199B. Senior Recital***

***199C. Honors Thesis in Music Theory***

***199D. Honors Thesis in Music History***

***199E. Honors Thesis in Composition***

***199F. Directed Study in Pedagogy***

***199G. Recording Engineering***

***199H. Independent Study***

***199I. Honors Junior Recital***

***199J. Honors Senior Recital***

## Applied Music: Ensembles

*Note: All ensemble courses are open to nonmajors and may be repeated for credit.*

### *40/140. Jazz Ensemble*

Preparation and performance of literature for stage and jazz ensembles. By audition only. (1 unit)

### *41/141. Concert Choir*

A 52–60 voice mixed ensemble of select singers that perform a wide variety of a cappella and accompanied secular and sacred choral music from every period in music history through the present day. Emphasis is on a comprehensive survey of choral literature through performance, as well as development of choral tone, blend, diction, and sight singing skills. By audition only. (2 units)

### *42/142. Chamber Singers*

An 18–24 voice mixed ensemble of highly select advanced singers. Repertoire includes a variety of sophisticated chamber choral music from the Renaissance to the present day. Concurrent membership in Concert Choir required. By audition only. (2 units)

### *43/143. Jazz Combo Workshop*

Focus on jazz improvisation, techniques and theory in small group performance. (0.5 units)

### *44/144. University Orchestra*

Preparation and concert performance of major works of orchestral literature. Performing Arts Grants are available to qualified students by audition. (2 units)

### *45/145. Guitar Ensemble*

Preparation and performance of ensemble literature for classical guitar. Open to selected students. (1 unit)

### *48/148. Chamber Music Ensemble*

Preparation and performance of instrumental chamber music. Students are encouraged to form their own small ensembles (strings, winds, brass, etc.). Appropriate faculty will assist in creating groups, supplying materials and performance opportunities and coaching the individual ensembles. (1 unit)

### *49/149. Accompanying*

Supervised accompanying of student lessons and recitals. By permission of instructor only. (1 unit)

## DEPARTMENT OF THEATRE AND DANCE

*Associate Professors:* Jerald R. Enos, Barbara Fraser *(Chair)*, Barbara Murray, Frederick P. Tollini, S.J.
*Assistant Professors:* Aldo Billingslea, Mark Monday, David Popalisky, Michael Zampelli, S.J.
*Senior Laboratory Instructor:* Elizabeth Dale

The Department of Theatre and Dance celebrates creativity of the human spirit, offering a well-rounded education leading to a Bachelor of Arts degree in Theatre Arts. This study involves both academic discipline and creative processes. These include practice and analysis of skills required in the performing arts; critical evaluation of literature, history, and theory of drama and dance; collaboration in production and public presentation of performance.

Theatre and Dance are distinct but related areas of emphasis. While each has its own set of requirements, students in either emphasis share common courses. Through lectures, studio courses, labs, and productions, students work closely with faculty and staff mentors. The theatre program offers coordinated courses in acting, design, technical production, directing, dramatic literature, and theatre history. Students within the theatre emphasis will have a well-rounded foundation but may focus their study on any of the above areas.

The dance program emphasizes modern dance and choreography, with additional training in jazz and ballet. In both areas, students have many opportunities for performance and production; majors have the option of a senior recital, directing project, design assignment, or a senior thesis. Majors must fulfill the University Core Curriculum and College requirements and the department requirements in their emphasis areas (Theatre or Dance).

A degree in Theatre Arts provides preparation for many career options. Some students continue on to graduate school, perfecting skills in acting, dance, design, directing, or historical studies. Graduates in theatre and dance have successfully pursued careers in professional theatre and dance companies, film, television, arts administration, and teaching. In addition, many have applied their skills in careers outside of theatre—in medicine, law, management, marketing, development, and religion.

A strong liberal arts education is inherent in the study of theatre and dance. Students are encouraged to work with their advisors planning a program that includes courses within their focus area and courses in other departments with related disciplines. Programs that partner well with theatre and dance include: English, music, communication, studio art, psychology, political science, and marketing. Students may combine theatre with various education waiver programs. Courses in theatre and dance can provide students of any major with experience in collaborative work, critical thinking, management, and communication skills.

## REQUIREMENTS FOR THE MAJOR IN THEATRE ARTS

### Lower Division

*Theatre Emphasis*

- THTR 9, 20, 21, 30
- PERF 11, 12, 13
- Two of the following: THTR 31, 32, or 33
- DANC 46

*Dance Emphasis*

- THTR 9, 20, 30
- PERF 11 and either 12 or 13
- DANC 40 or 43 and 46, 47, 48, 49
- One of the following: THTR 31, 32, 33

### Upper Division

*Theatre Emphasis*

- THTR 185
- One of the following: THTR 116, 117, 118
- One of the following: THTR 111, 112, 113, 114, 116*, 117*, 118*, 119, 161, 164, 181, 182; GERM 180; or PERF 164 (*in addition to one of the courses taken above)
- One of the following: THTR 167, 187 or 189 (Note: One period course or seminar must be prior to 1700, one after 1700)
- Three theatre and dance electives

*Dance Emphasis*

- DANC 143, 146, 147
- One of the following: DANC 140, 141, 142, 145, or 148
- One of the following: DANC 166; THTR 187, 189; PERF 162, 164
- Three theatre and dance electives

### Technical Requirement

Active participation is expected of all theatre and dance majors and minors in both departmental and student productions. All theatre and dance majors are required to complete four units of THTR 39/139, which gives credit for scenery and costume construction, stage management, assistant stage management, and various run crew positions for each department production. Minors are required to complete two units. Transfer students are evaluated individually.

## REQUIREMENTS FOR THE MINOR IN THEATRE OR DANCE

### Lower Division

*Theatre*

- THTR 10, 20 or 11, 30 or 31
- One theatre and dance elective

*Dance*

- THTR 10
- DANC 46, 47, 48, 49
- Four units of ballet or jazz

### Upper Division

*Theatre*

- Four theatre and dance courses

*Dance*

- DANC 143,146, 147
- One theatre and dance elective
- All minors are required to take THTR 39 or 139

## THEATRE PRODUCTION PROGRAM

The theatre season usually includes at least four faculty-directed plays, three dance concerts, and student-directed plays and recitals. Participation in departmental productions is open to all members of the University community: students, faculty, and staff. Guest productions by professional dance and theatre companies occasionally form part of the season; and guest artists periodically direct, design, or perform in shows with Santa Clara students.

## THEATRE

## LOWER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *9. Defining the Performing Artist*

Being in tune as a performing artist means being aware of the connection between body, mind, and spirit. Topics include discussion of professional resumes, head shots, auditions, and career choices. Also, the implications of being a performing artist, body image and awareness, self-esteem, lifestyle/health choices, nutrition and diet, and stress management strategies. (2 units)

### *10. Introduction to Theatre Arts*

Creating a show: basic performance and production skills leading to theatrical presentation. Recommended for fulfillment of Fine Arts requirement for nonmajors. (4 units)

### *11. Acting for Nonmajors*

Through standard theatre games, exercises, monologues, and scenes, students will explore, via Stanislavski's "method of physical action," basic principles of the acting craft. Recommended for fulfillment of Fine Arts requirement. (4 units)

### *13. Creative Dramatics and Puppetry*

This class will explore how children develop through dramatic play. Students will learn to structure creative learning experiences based upon dramatics. Included will be storytelling, problem solving, discovery learning, dramatization, and various forms of puppetry. (4 units)

### *14. Chicano Theatre*

Study of performance of the "acto," Hispanic American Theatre's basic form of theatrical expression. (4 units)

### *20. Acting I*

Required for majors and minors in Theatre and Dance. Foundation of the acting curriculum; this course uses improvisation, theatre games, scenes, and monologues, to explore Stanislavski's "method of physical action." No prerequisite. Priority given to Theatre Arts majors. (4 units)

### *21. Voice I*

Required for majors and minors in Theatre and Dance. Study of vocal production and technique for the stage. Using principles of the Alexander Technique and other sources, students will learn vocal production and mechanics for building and maintaining the voice. No prerequisite. Priority given to Theatre Arts majors. (4 units)

### *24. Acting II*

Building on the skills acquired in Acting I the student will apply the concepts of "objective and action" to scripted material. Students will rehearse and perform scenes from plays by American playwrights bringing foundation skills to physical life. *Prerequisite: THTR 20.* (4 units)

### *25. Movement for the Actor*

A skills class which may include or be a combination of work in masks, stage combat, Alexander Technique, Feldenkrais, circus skills, or other technique depending on departmental needs or instructor expertise. *Prerequisite: THTR 20.* (4 units)

### *26. Voice II*

Advanced study of voice for the stage. Study and use of the International Phonetic Alphabet as applied to what is often referred to as "Standard American Speech." The IPA will also be applied to learn various dialects which may include among others—British, Southern, New York, and Irish. *Prerequisites: THTR 20 or permission of the head of the acting program.* (4 units)

### *27. Children's Theatre Production*

The development and production of traditional and bilingual theatre for children. Focus is on ethnic folk tales and social justice issues. Touring production. (2 quarters/2 units each quarter)

### *29. Rehearsal and Performance*

Active participation in the preparation and performance of departmental productions as actors, assistants to the director, dancers, and choreographers. Individual design/technical assignments. *Prerequisite: Approval of director of production.* May be repeated for a total of eight units. (2 units)

### *30. Introduction to Design*

Explores the role of design as a part of the production process. The course includes a study of the elements and principles of design as they apply to scenic, lighting, and costume design. Also included: design development and the role of each designer in the production. (4 units)

### *31. Introduction to Production*

Overview of the organization, concepts, terminology, and skills involved in technical theatre. (4 units)

### *32. Costume Construction*

Introduction to making costumes: fabric/textile studies, sewing techniques, dying and ornamentation, and costume crafts. (4 units)

### *33. Stage Lighting*

Principles and practice. Color, instrumentation, basic electricity, and electronics. Elementary design theory and practice. (4 units)

### *35. Technology and Theatre*

An introduction to computer applications as an aid to design, problem solving, and management in theatre. (4 units)

### *36. Makeup for Stage*

Basic principles of makeup for the stage. Youth, old age, and special problems. Use of all media. (2 units)

### *37. Graphics and Rendering for Theatre Design*

Introduction to graphic representation. Drafting, mechanical perspective, freehand drawing, isometrics, white model development, painter's elevation, rendering, and portfolio presentation. Offered in alternate years. (4 units)

### *38. Scene Painting*

Techniques of painting for the stage. Psychology of color and practical application of paint as employed in all areas of scenic and costume design. Offered in alternate years. (4 units)

### *39. Production Workshop*

Training in development of technical skills for stage production. Directed work in scenery and costume construction, lighting, sound, and stage management. May be repeated for a total of eight units. Not applicable to paid work hours or to laboratory hours connected with stagecraft courses. (2 units)

### *63. Introduction to Dramatic Literature*

This course focuses on drama within its literary and historical context, and emphasizes its development both as a literary and theatrical form. It covers the Elizabethan to Contemporary periods. (4 units)

### *65. Multicultural Theatre*

Addressing social, ethnic, and gender issues from several groups outside the dominant culture through diverse types of theatre, including, but not limited to, Asian American, Hispanic, African American, Gay, and Lesbian theatre. (4 units)

### *68. Special Topics: Playwright's Workshop*

Workshop focuses on the development of a script or performance piece centered on a particular chosen theme. May include research, interviews, improv, and script development. (4 units)

### *99. Independent Study*

Directed reading and/or research. *Prerequisite: Written proposal must be approved by the instructor and department chair one week prior to registration.* (2–4 units)

## UPPER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *111. English Drama I*

Also listed as ENGL 113. For course description see ENGL 113. (5 units)

### *112. Topics in Theatre and Drama prior to 1700*

Course topics include: Medieval Drama, Commedia Dell'Arte, Elizabethan and Restoration Drama, Classic Drama East and West. (Also listed as ENGL 112A.) (5 units)

### *113. Topics in Theatre and Drama after 1700*

Course topics include: Neo-Classic Drama, and 19th-Century American Theatre. (Also listed as ENGL 112B.) (5 units)

### *114. English Drama II*

Also listed as ENGL 114. For course description see ENGL 114. (5 units)

### *116. Shakespeare's Tragedies*

Also listed as ENGL 116. For course description see ENGL 116. (5 units)

### *117. Shakespeare's Comedies*

Also listed as ENGL 117. For course description see ENGL 117. (5 units)

### *118. Shakespeare's Histories*

Also listed as ENGL 118. For course description see ENGL 118. (5 units)

### *119. Modern American Theatre History (1915–present)*

A study of the significant cultural and literature trends in American theatre. (Also listed as ENGL 119.) (5 units)

### *120. Acting Styles I: Shakespeare*

Techniques for performing the works of William Shakespeare and other Elizabethan playwrights. Students will learn scansion and perform sonnets, monologues, and scenes from plays. *Prerequisites: THTR 20, THTR 21, DANC 46 (THTR 24 and THTR 26 recommended).* Offered in alternate years. (5 units)

### *121. Acting Styles II: Comedy of Manners*

A course focused in the genres of Restoration Comedy and French Neo-Classical. Primarily a scene study class exploring period movement and "heightened text." *Prerequisites: THTR 20, THTR 21, DANC 46 (THTR 24 recommended).* Offered in alternate years. (5 units)

### *122. Acting Styles III: Acting for the Camera*

Specific techniques of acting in commercials, television, industrials, and film. Students will perform scenes in front of the camera to achieve understanding of the differences and similaritites of acting in this media. Students may also learn editing and shooting. *Prerequisites: THTR 20, THTR 21, DANC 46, THTR 24.* (5 units)

### *123. Acting Styles IV: Musical Theatre*

Focus on the techniques and skills of the acting interpretation of the lyrics and songs of musical numbers from musicals, cabarets, and other forms of musical theatre. *Prerequisites for majors: THTR 20, THTR 21, DANC 46 (THTR 26, THTR 24, DANC 40 recommended); prerequisites for musical theatre minors: THTR 20 (DANC 40 and MUSC 34 recommended).* Offered in alternate years. (5 units)

### *125. Special Topics*

A scene study course that may include Realism (Chekhov, Ibsen), Absurdist, Experimental, Brecht, or other styles depending on departmental needs or instructor expertise. *Prerequisites: THTR 20 and approval of the head of the acting program.* (5 units)

### *127. Children's Theatre Production*

For course description see THTR 27. (2 units)

### *129. Rehearsal and Performance*

For course description see THTR 29. (2 units)

### *131. Sound Design*

Principles of sound in theatre production. Emphasis on practical applications and equipment use; digital and automation sound theories. *Prerequisite: THTR 30 or equivalent.* Offered in alternate years. (5 units)

### *132. Lighting Design*

Application of lighting skills to production design. *Prerequisite: THTR 33 or equivalent.* Offered in alternate years. (5 units)

### *133. Scene Design*

Application of graphic skills to scenic design. Styles, scene painting technique, set décor. *Prerequisite: THTR 37 or equivalent.* Offered in alternate years. (5 units)

### *134. Costume Design*

Principles of costume design for the stage. Application of design elements to convey character and production concepts. Period research, style, and rendering techniques. Offered in alternate years. (5 units)

### *137. Pattern Drafting and Draping*

Drafting and draping techniques for a basic bodice, skirt, sleeve, and collars, and techniques for developing variations. Emphasis on drafting period garments. *Prerequisite: THTR 32 or permission of instructor.* Offered in alternate years. (5 units)

### *138. Production Management*

Designed to acquaint students with the complexities of managing productions from the audition process to final performance. Directing, lighting, scenic production, sound, cueing, budgets, and personnel management are aspects that will be touched upon in class. Offered in alternate years. (5 units)

### *139. Production Workshop*

For course description see THTR 39. (2 units)

### *150. Social History of Fashion I*

Study of the influence of social background on structure, style, and the use of clothing in the Western world from ancient time to the 17th century. Offered in alternate years. (5 units)

### *151. Social History of Fashion II*

Study of the influence of social background on structure, style, and use of clothing in the Western world from the 18th century to the present. Offered in alternate years. (5 units)

### *160. Literature and Performance*

Adapting literature (poems, novels, short stories, diaries, etc.) for the stage, and writing complete scripts for performance and production. Theories of both narrative and dramatic structures. (Also listed as ENGL 191.) (5 units)

### *161. American Theatre from the Black Perspective*

An exploration of the contributions Black artists have made to enrich the American theatre as playwrights, actors, and directors. (Also listed as ENGL 192.) (5 units)

### *164. Women in Theatre*

This seminar is designed to reflect on the various roles women have played in the modern American theatre. (5 units)

### *167. Gender and Performance*

This course will explore issues of gender and sexuality as they are performed in theatre, music, dance, and contemporary performance art. (5 units)

### *168. Special Topics: Playwright's Workshop*

Workshop focuses on the development of a script or performance piece centered on a particular chosen theme. May include research, interviews, improv, and script development. (5 units)

### *170. Playwriting*

Critical analysis of dramatic structure for the playwright. Scenarios, character studies, writing of original plays. (Also listed as ENGL 193.) (5 units)

### *171. Advanced Playwriting*

Continuation of THTR 170. (Also listed as ENGL 194.) (5 units)

### *173. Screenwriting*

Also listed as ENGL 173. For course description see ENGL 173. (5 units)

### *176. Arts Administration*

Multidisciplinary studies (art, music, theatre) in problems of arts administration. (5 units)

### *181. Classical Tragedy*

Also listed as CLAS 181 and ENGL 110. For course description see CLAS 181. (5 units)

### *182. Classical Comedy*

Also listed as CLAS 182 and ENGL 111. For course description see CLAS 182. (5 units)

### *185. Dramaturgy*

Play analysis in the context of theatrical genres and historic period cultures. (Also listed as ENGL 195.) (5 units)

### *186. Theory of Stage Directing*

Basic course in the problems, techniques, and theory of directing plays for the live theatre. *Prerequisites: THTR 20 or THTR 11 and THTR 185* . (5 units)

### *187. Seminar in Theatre and Dance before 1700*

Topics include: Medieval Religious Drama and Performance, Shakespeare Seminar, and Antitheatricalism. Can be repeated for credit as topic varies. (5 units)

### *189. Seminar in Theatre and Dance after 1700*

Topics include: The Theatre of Stephen Sondheim, Asian Drama, and the works of August Wilson. Can be repeated for credit as topic varies. (5 units)

### *192. Senior Project: Showcase*

A recital for theatre majors, with acting emphasis, showcasing their performance abilities. *Prerequisites: Two acting styles courses and approval of the head of the acting program.* (5 units)

### *194. Senior Creative Project*

Capstone project showcasing playwriting or performance art skills. *Prerequisite: Permission of faculty.* (5 units)

### *195. Senior Project: Design/Technical*

Students serve as designers for sets, costumes, lights, or sound, or as technical directors for a departmental production. *Prerequisite: Approval of design faculty.* (5 units)

### *196. Senior Project: Directing*

Project in directing. A short play, fully staged. *Prerequisites: THTR 20, 30, 138, 185, 186; PERF 11, 12, 13. Successful completion of stage crew assignments which includes: run crew for two departmental productions, and stage manager for a one act play or departmental play. Permission of instructor.* (5 units)

### *197. Senior Thesis*

A senior thesis in history/literature/dramaturgy. The thesis would be written for the advisor in consultation with other committee members. Upon completion of the thesis, an oral defense will take place before a selected committee. *Prerequisite: Faculty approval.* (5 units)

### *198. Practicum*

Reserved for projects with recognized institutions outside the University. *Prerequisite: Written proposal must be approved by instructor and department chair one week prior to registration.* (1–5 units)

### *199. Independent Study/Directed Reading/Directed Research*

Two areas of directed study: creative projects in directing, choreography, technical production, design, playwriting, administration, or directed reading and/or research. *Prerequisite: Written proposal must be approved by the instructor and department chair one week prior to registration.* (2–5 units)

For additional theatre-related courses see: GERM 180; PERF 11, 12, 13, 162, 164, 180.

## DANCE

## LOWER-DIVISION COURSES

*Note: For additional courses, see Center of Performing Arts: Performance Studies. For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *29. Rehearsal and Performance*

Active participation in the preparation and performance of departmental productions as actors, assistants to the director, dancers, and choreographers. Individual design/technical assignments. *Prerequisite: Approval of director of production.* May be repeated for a total of eight units. (2 units)

### *40. Jazz Dance I*

Introductory course in jazz dance with no previous training required. Introduces body isolation, rhythmic awareness, movement coordination, and jazz styles through performance of dance combinations. (2 units)

### *41. Jazz Dance II*

Continuation of jazz fundamentals introduced in DANC 40 with emphasis on learning and retaining longer combinations. (2 units)

### *42. Jazz Dance III*

Continued study of jazz dance at an intermediate level with emphasis on technique, flexibility, balance, control, muscle tone, and retaining long combinations in a variety of jazz styles. Students choreograph final projects. (2 units)

### *43. Ballet I*

Introductory course in ballet with no previous training required. Develops individual strength, flexibility, and coordination through classical ballet technique. Includes barre and floor combinations. (2 units)

### *44. Ballet II*

Continuation of ballet fundamentals introduced in DANC 43 with emphasis on discipline, coordination, and developing practical performing skills in classical ballet technique. Includes barre and floor combinations. (2 units)

### *45. Ballet III*

Continued study of ballet at intermediate level, encouraging technical and performing proficiency. Focus on correct alignment and developing artistic expression. Includes barre exercises and intermediate-level floor combinations. (2 units)

### *46. Modern Dance I*

Introductory course in modern dance with no previous training required. Introduces the expressive potential of dance through modern dance technique. Emphasis on flexibility, strength, and alignment practiced through standing and floor exercises. Movement improvisation explores qualities of motion. (2 units)

### *47. Modern Dance II*

Continuation of modern fundamentals introduced in DANC 46 with emphasis on technique, flexibility, coordination, and creativity. (2 units)

### *48. Modern Dance III*

Continued study of modern dance at an intermediate level. Emphasis on release techniques, rhythmic precision, and spatial principles through extended combinations and movement improvisation. (2 units)

### *49. Dance Composition*

Traditional approaches to compositional problems of form and design, time and rhythm, energy flow and force in dance as an art form. (4 units)

### *50. Tap I*

Introductory course in tap dance with no previous training required. Develops better coordination, rhythm, and timing. Strengthens the feet and legs. You will be learning basic tap terminology and steps. (2 units)

### *51. Tap II*

Continuation of tap fundamentals introduced in DANC 50. A series of regulated and controlled rhythmical movements of the body, accompanied by music, which develops a sense of rhythm and coordination. Learn tap steps and apply them to the art of performance. (2 units)

### *52. Afro-Haitian Dance*

Introductory course in Afro-Haitian dance with no previous training required. This is a basic technique class that introduces the subtleties of the dance, proper body placement, and the rhythmic structure between the dance and the music. (2 units)

### *54. Mexican Folklorico Dance*

Introductory course in Mexican folklorico dance with no previous training required. Course introduces steps and moves from various regional forms of dance from Mexico including Azteca, Quebradita, Danzon, and Salsa Mexican style; plus a very structured form of exercise for footwork called "tecnica" drills to enable the dancer to pick up more intricate and challenging material. (2 units)

### *55. Musical Theatre Dance Styles*

This class will explore musical theatre dance styles. Based on jazz technique, it will consist of warm-ups, basic dance steps, and combinations from musical theatre. (4 units)

### *56. Pilates*

Pilates is the latest technology for conditioning the human body. Pilates is excellent for building a deep internal strength and an integrated, aligned body for anyone with an active lifestyle, as well as for injury prevention and recovery. Registration is by add form only. Minimum of nine private sessions. Private instruction fee. (1 unit)

### *57. Children's Dance Production*

The development and production of creative dances designed for children K-12 (lower or higher grades in alternate years). Focus on improvisation and sharing the art of dance through interactive performance. Touring production. (2 units)

### *59. Introduction to Teaching Dance*

This course covers the fundamentals of teaching dance and movement in public and private K-12 settings. Students will learn how to plan developmentally appropriate curriculum, incorporate the anatomical and artistic fundamentals necessary for a safe and effective technique class, lead creative movement experiences, and integrate dance with other academic subjects. Will include work with children and teens in local schools. *Prerequisite: Any introductory level dance course.* (4 units)

### *66. Women in Dance History*

Introduction to significant European and American women dance artists from the 1830s to the present with a focus on their achievements as dancers, choreographers, critics, and scholars within their social context. This class will view dance through feminist theoretical perspectives to address issues of power, agency, and personal expression in ballet, modern, jazz, and ethnic dance forms. (4 units)

### *99. Independent Study*

Includes directed reading and/or research, teaching assistants, and/or focused participation in special projects. *Prerequisite: Written proposal must be approved by the instructor and department chair one week prior to registration.* (2–4 units)

## UPPER-DIVISION COURSES

*Note: For additional courses, see Center of Performing Arts: Performance Studies. For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *129. Rehearsal and Performance*

For course description, see DANC 29. (2 units)

### *140. Advanced Ballet I*

Advanced level study of classical ballet with focus on American and European styles. Includes ballet barre exercises, center adagio, and allegro combinations at intermediate/advanced level. *Prerequisite: Permission of instructor.* (5 units)

### *141. Advanced Ballet II*

Continuation of DANC 140. *Prerequisite: Permission of instructor.* (5 units)

### *142. Advanced Jazz Dance I*

Builds from an assumed intermediate level of jazz dance technique. Emphasis on personal style and performance techniques in advanced jazz dance combinations. *Prerequisite: Permission of instructor.* (5 units)

### *143. Choreography*

Emphasis on the creative process, dynamics, phrasing, and thematic development through choreographing and performing an original group dance. Exploration of aesthetic and stylistic approaches to choreography. *Prerequisite: DANC 49 or equivalent.* (5 units)

### *145. Advanced Jazz Dance II*

Continuation of DANC 142. Emphasis on learning longer warm-ups, combinations, and adagio work. Opportunity to create your own choreography, and learn technique of teaching fellow students. (5 units)

### *146. Advanced Modern Dance I*

Intermediate/advanced level study of modern dance technique. Emphasis on release principles, breath control, phrasing, clarity of line, and movement qualities. Improvisation and extended combinations develop performance commitment. *Prerequisite: Permission of instructor.* (5 units)

### *147. Advanced Modern Dance II*

Continuation of DANC 146. Emphasis, through improvisation and combinations, on the temporal component of dance: rhythm, tempo, time signatures, and polyrhythms. *Prerequisite: Permission of instructor.* (5 units)

### *148. Advanced Modern Dance III*

Continuation of DANC 146 and DANC 147. Focus on modern dance styles: lyrical, classical, eclectic, and pedestrian. Emphasis on developing a clear, personal performance style and movement analysis skills. *Prerequisite: Permission of instructor.* (5 units)

### *149. Dance Outreach*

A performance of original creative student work both on and off campus as a representative of the department. Certain outreach venues will be coordinated with the Arrupe Center. *Prerequisite: Permission of instructor.* (2–5 units)

### *156. Pilates*

Pilates is the latest technology for conditioning the human body. Pilates is excellent for building a deep internal strength and an integrated, aligned body for anyone with an active lifestyle as well as for injury prevention and recovery. Registration is by add form only. Minimum of nine private sessions. Private instruction fee. (1 unit)

### *157. Children's Dance Production*

The development and production of creative dances designed for children K-12 (lower or higher grades in alternate years). Focus on improvisation and sharing the art of dance through interactive performance. Touring production. (2 units)

### *165. Intermediate/Advanced Modern Dance and Video*

Includes extensive integration of video technologies and dance. The mixed-level technique class focuses on alignment, flexibility, strength, complex rhythms, and music interpretation with some improvisation and composition opportunities. Students will work with digital cameras, learn the basics of lighting, shooting techniques, storyboarding, projections, streaming video to the Web, and how to best document dance on video. (5 units)

### *166. Women in Dance History*

Introduction to significant European and American women dance artists from the 1830s to the present with a focus on their achievements as dancers, choreographers, critics, and scholars within their social context. This class will view dance through feminist theoretical perspectives to address issues of power, agency, and personal expression in ballet, modern, jazz, and ethnic dance forms. (5 units)

### *193. Senior Project: Dance*

A recital for Theatre majors, with dance emphasis, showcasing their performance abilities. *Prerequisite: Approval of dance faculty.* (5 units)

### *198. Dance Practicum*

Reserved for projects/internships with recognized institutions outside of the University. *Prerequisite: Written proposal must be approved by the instructor and the department chair one week prior to registration.* (5 units)

### *199. Independent Study*

Various areas of directed study: creative projects in directing, choreography, technical production, design, playwriting, administration, teaching assistants, focused participation in special project, or directed reading and/or research. *Prerequisite: Written proposal must be approved by the instructor and department chair one week prior to registration.* (2–5 units)

## DEPARTMENT OF PHILOSOPHY

*Professors:* James W. Felt, S.J., Philip J. Kain, Michael Meyer, William J. Prior
*Associate Professors:* Christopher B. Kulp, William A. Parent, Elizabeth S. Radcliffe *(Chair)*, Mark A. Ravizza, S.J.
*Assistant Professor:* Scott LaBarge
*Adjunct Associate Professor:* Lawrence Nelson
*John Nobili, S.J., Professor:* James W. Felt, S.J.

Philosophy inquires directly into the relation of human beings to the world: what we are, how we know, what values are, how we live humanly. Worth pursuing for its own sake, philosophical inquiry also promotes analytical thinking and precise expression and, thus, is excellent undergraduate preparation for a number of professional careers, such as law, government, writing, social work, and computer programming.

### REQUIREMENTS FOR THE MAJOR AND MINOR

Students choosing philosophy as their major, in addition to the general University Core Curriculum requirements and the requirements for the Bachelor of Arts degree in the College of Arts and Sciences, must complete at least 13 philosophy courses including the following:

1. Five lower-division courses: PHIL 11, 12, 13, 25 or 27, 50. Philosophy majors should complete at least 11, 12, 25 or 27, and 50 before enrolling in any upper-division philosophy courses.
2. Eight upper-division classes including four classes distributed as follows:
   a. Two historical courses selected from two of the following four periods: ancient (131), medieval (132), modern (133), and contemporary (135, 136, 137, 138)
   b. One course in ethical theory selected from courses numbered 120–129
   c. One course in either metaphysics or epistemology selected from courses numbered 125 or 140–149

The minor in philosophy requires completion of PHIL 11 and 12; 25 or 27; and any four upper-division courses. PHIL 13 may be substituted for one upper-division course.

### PRE-LAW EMPHASIS

Philosophy is one of the best majors for pre-law. The mean for philosophy majors taking the LSAT is about 8 percent higher than the mean of other departments. The pre-law emphasis in philosophy is intended to provide the skills of analytic reasoning and conceptual investigation necessary for law. Philosophical research hones the techniques of careful argumentation and logically disciplined reasoning essential to the legal analysis of cases and statutes. Also, emphasis on ethics courses will help prepare students for the study and analysis of normative issues. The pre-law emphasis may be taken as part of a philosophy major or as part of a minor, or the courses may be taken alone.

### Requirements for Pre-Law Emphasis

1. One course chosen from PHIL 25, 27, or 152
2. One course chosen from PHIL 113 or 154
3. One course chosen from PHIL 2, 5, 6, 7, 8, 9, 10, 109, 110, 112, 121, 122, 123, 142, or 136
4. Two courses chosen from 1, 2, or 3 above

## HONORS IN THE MAJOR

To qualify for honors in philosophy, the major ordinarily must have a 3.5 grade point average in philosophy courses and complete PHIL 198.

## INTRODUCTORY-LEVEL COURSES

### GENERAL INTRODUCTION

#### *1. Introduction to Philosophy*

Introduction to philosophy. Consideration of the problems raised in at least three major areas: ethics, metaphysics, and epistemology. (4 units)

#### *2. Introduction to Ethics*

Consideration of the traditional theoretical questions posed in moral philosophy: standards that determine the morality of an action, the motives and consequences of an act, the good life. Authors studied may include Plato, Aristotle, Aquinas, Bentham, Mill, Kant. (4 units)

#### *4. Ethics and Gender*

Formal inquiry into normative ethics. Emphasis on ethical principles and theories as well as the application of these to issues essentially intertwined with concepts of sex and gender as they apply to both men and women. Special attention to gender theory and feminism. Topics studied may include pornography, sexuality, heterosexual/homosexual marriage and family life, domestic violence and rape, abortion and reproduction, fashion and appearance, gender discrimination, sex-based affirmative action, and sexual harassment. (4 units)

#### *5. Ethical Issues in Society*

Formal inquiry into normative ethics. Special attention to general ethical principles and to the practical application of these principles to current ethical issues in society. Topics may include the concepts of freedom, obligation, value, rights, justice, virtue, and moral responsibility, as applied to issues like abortion, punishment, economic distribution, racial and sexual discrimination, sexuality, political obligation, nuclear war, and pornography. (4 units)

#### *6. Ethical Issues in Business*

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in business. Topics may include truth in advertising, corporate social responsibility, affirmative action, capitalism, government regulation, quality of work-life, environmental and resource issues, and ethical codes of conduct. (4 units)

#### *7. Ethical Issues in Medicine*

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in medicine and the health sciences. Topics may include the definition of death, informed consent, distribution of health care, euthanasia, genetic manipulation, artificial conception, prolongation of life, and organ transplants. (4 units)

### *8. Ethical Issues in Politics*

Formal inquiry into normative ethics. Emphasis on moral issues in political theory. Possible topics include the concepts of rights, justice, dignity, equality, personhood, desert, retributivism, and utility. Issues discussed may include alienation, individualism, community, discrimination, capital punishment, sexual equality, civil disobedience, revolution, and world hunger. (4 units)

### *9. Ethical Issues and the Environment*

Formal inquiry into normative ethics. Emphasis on moral issues and the environment. Topics include animal rights, anthropocentrism, cost-benefit analysis, human rights, interspecies justice, land (use and value), population control, rights (of future generations and natural objects), values (moral and aesthetic) and preferences, wildlife protection, wilderness. (4 units)

### *10. Ethical Issues in the Law*

Formal inquiry into normative ethics. Emphasis on moral issues and concepts in contemporary legal debates on issues such as hate speech and freedom of speech, the right to die, homosexual parenting, abortion picketing, the exclusionary rule, the insanity defense, and the legalization of drugs. Discussion of moral dilemmas confronting criminal lawyers, including the practice of knowingly allowing false testimony from their clients. (4 units)

### *11. Western Culture: Philosophy I, Classical and Medieval*

Beginnings of Western philosophy. Representative writers of the Greek and medieval traditions, with attention to their historical and literary milieu and their relevance to contemporary thought. (4 units)

### *12. Western Culture: Philosophy II, Early Modern*

Principal fashioners of the modern mind. 17th- and 18th-century philosophers studied in the historical and literary context of their times with attention to their impact on the present. (4 units)

### *13. Western Culture: Philosophy III, Modern and Contemporary*

Introduction to the closer roots of modern thinking, from the critical revolution of Kant to some of the dominant currents of the 20th century. *Prerequisite: PHIL 12 strongly recommended.* (4 units)

## Logic Courses

### *25. Informal Logic*

Introduction to the art of logical reasoning. Emphasis on the ability to recognize common fallacies of argumentation. (4 units)

### *27. Introduction to Formal Logic*

Introduction to the study of deductive inference, including traditional and modern techniques. (4 units)

## Metaphysics and Epistemology

### *50. Knowledge and Reality*

Introduces two central areas of philosophy—epistemology and metaphysics—through the study of several fundamental problems in those areas. Problems that may be studied include the existence of God, the relation between mind and body, freedom of the will, the nature and possibility of knowledge, and the relation between language and reality. Required of all philosophy majors and normally taken during the sophomore year. (4 units)

## INTERMEDIATE-LEVEL COURSES

*Normal prerequisite for non-ethics courses: at least one introductory-level course.*

### *109. Ethics and the Environment*

Formal inquiry into normative ethics. Investigation of environmental issues from the point of view of classical ethical perspectives and consideration of how questions about the moral value of the environment provide new challenges to such classical theories. Topics may include animal rights, human rights, the rights of future generations, the rights of nature, anthropocentrism, interspecific justice, land (use and value), wilderness, and values and preferences. (5 units)

### *110. Ethics in the Health Professions*

Formal inquiry into applied ethics. Emphasis on moral issues encountered by members of the health professions. Topics may include the formulation of professional ethical standards and the examination of moral dilemmas in medicine, psychological counseling, and other areas of health care. (5 units)

### *112. Ethics in Management*

Formal inquiry into applied ethics. Emphasis on moral issues encountered by managers. Topics may include the role of ethical principles in business and ethical dilemmas raised by the management and administration of business organizations, such as conflicts of interest, organizational politics, commercial bribery, whistle-blowing, labor-management conflicts, and consumerism. (5 units)

### *113. Ethics and Constitutional Law*

A course on our moral and legal rights under the Constitution. The values of due process, freedom of speech, freedom of the press, equal protection, and privacy as interpreted and applied by the U.S. Supreme Court. Readings consist of Supreme Court cases. Philosophical commentary from the professor. (5 units)

### *115. Feminism and Ethics*

Exploration of theories of feminism, patriarchy, and gender, and of ethics as applied to the contemporary experience and social situation of women. Topics may include equality, affirmative action, comparable worth, pornography, sexuality, reproductive technologies, maternal-fetal relations, rape and domestic violence, female body image, cosmetic surgery, "alternative" families, militarism, and environmentalism. (5 units)

### *117. Science, Technology, and Society*

Investigation of the religious and ethical significance of the impact of technology on society. (5 units)

### *118. Ethics and Warfare*

Historical and contemporary approaches to the ethical issues that arise in warfare. (5 units)

### *119. Special Topics in Applied Ethics*

Selected philosophical problems in applied ethics studied at an advanced level. (5 units)

### *120. Ethical Theory*

Examination of major philosophers or issues in moral and social philosophy. Topics may include dignity, moral rights and obligations, justice, moral relativism, virtue, the good, and happiness. (5 units)

### *121. Classic Issues in Ethics*

Exploration of the fundamental questions of ethics through close study of some of the great works of moral philosophy, such as Plato's Republic, Aristotle's Nicomachean Ethics, Kant's Groundwork, and Mill's Utilitarianism. *Prerequisite: Upper-division standing.* (5 units)

### *122. Political Philosophy and Ethics*

Moral issues in political philosophy, especially traditional ethical justifications for political authority. Topics may include theories of political authorization and contract theory, rights, liberty, equality, justice, community, revolution, civil disobedience, and others. Specific variations include 122A (Classical and Modern), 122B (Contemporary). *Prerequisite: Upper-division standing.* (5 units)

### *123. Marx and Ethics*

Examination of Marx's ethical thought in the context of traditional ethical theory (Aristotle, Kant) and in relationship to his political views and philosophy of history. Topics may include alienation, the human essence, the individual, community, needs, freedom, equality, rights, and justice. (5 units)

### *124. Virtue Ethics*

Exploration of various basic issues in ethics, such as friendship, courage, or compassion, from the point of view of virtues or (moral) character. Close study of classic authors—for example, Aristotle—as well as contemporary writers on virtue ethics. *Prerequisite: Upper-division standing.* (5 units)

### *125. Moral Epistemology*

An investigation into the foundations of ethics: principally concerned with (1) the nature of ethics, and (2) the nature and possibility of moral knowledge. Issues to be discussed may include cognitivism and noncognitivism in ethics, moral relativism, moral realism, and moral skepticism. *Prerequisites: Philosophy 50 and one ethics course; or permission of instructor.* (5 units)

### *129. Special Topics in Ethical Theory*

Selected philosophical problems in ethical theory studied at an advanced level. (5 units)

### *130. Philosophy of History*

Study of major figures in the philosophy of history. Exploration of such questions as whether history is moving toward a goal, whether it can be rationally guided, and if so, how. (5 units)

### *131. Ancient Philosophy*

Study of one major philosopher or philosophical issue (such as substance, causation, or virtue) from the ancient period. Specific variations include 131A (Socrates), 131B (Plato), and 131C (Aristotle). *Prerequisite: PHIL 11.* (5 units)

### *132. Medieval Philosophy*

Study of one major philosopher or philosophical issue (such as universals, existence and the nature of God, or free will) from the medieval period. Specific variations include 132A (Augustine) and 132B (Aquinas). *Prerequisite: PHIL 11.* (5 units)

### *133. Modern Philosophy*

Study of one major philosopher or issue (such as mind and body, skepticism and knowledge, or causation) from the modern period. Specific variations include 133A (Hume), 133B (Kant), and 133C (Hegel). *Prerequisite: PHIL 12.* (5 units)

### *134. Skepticism*

Study of the problem of skepticism from its origin in ancient Greece to the present day. Considers both skeptical positions and views critical of skepticism. Readings may include Sextus Empiricus, Descartes, Hume, and Wittgenstein. *Prerequisite: PHIL 11 or 12.* (5 units)

### *135. Existentialism*

General introduction to existentialism in its analysis of the basic structures of human existence, particularly freedom, and in its major thinkers. *Prerequisite: PHIL 12 or permission of instructor.*

### *136. Analytic Philosophy*

Examination of the major current in 20th-century Anglo-American philosophy. Philosophers studied may include Frege, Russell, Carnap, Moore, Wittgenstein, and Austin; movements may include logical positivism and ordinary-language philosophy. *Prerequisites: PHIL 12 and 25 or 27.* (5 units)

### *137. Contemporary European Philosophy*

Selected topics from 20th-century European philosophy: movements such as phenomenology and structuralism; philosophers such as Husserl, Heidegger, Merleau-Ponty, Sartre. (5 units)

### *138. Heidegger*

Intensive study of the work of a major thinker of the 20th century. *Prerequisites: PHIL 13 and either 11 or 12.* (5 units)

### *139. Special Topics in the History of Philosophy*

Selected philosophical problems in history of philosophy studied at an advanced level. (5 units)

### *140. Philosophy and Science*

Exploration of selected philosophic questions that arise in contemporary science, especially physics. Topics include the nature of scientific knowing, the replacement of theories, paradoxes of relativity and quantum theory, and the sense in which scientific objects are "real." *Prerequisite: PHIL 12.* (5 units)

### *141. Metaphysics*

Examination of major issues in metaphysics. Topics may include the nature and possibility of metaphysics, free will and determinism, the mind/body problem, personal identity, and metaphysical issues arising in science. *Prerequisites: PHIL 11, 12, and 25 or 27.* (5 units)

### *142. Theory of Knowledge*

Examination of major issues in the theory of knowledge. Topics may include justification of belief, a priori knowledge, perception, and theories of truth. *Prerequisites: PHIL 12 and 25 or 27.* (5 units)

### *143. Analytic Metaphysics*

Philosophical investigation of the free-will problem. Discussion of concepts of freedom, fate, causation, and God. (5 units)

### *144. Philosophy of Mind*

Examination of issues relating to the existence and nature of mind and its relation to body. *Prerequisite: Upper-division standing.* (5 units)

### *149. Special Topics in Metaphysics and Epistemology*

Selected philosophical problems in metaphysics and/or epistemology studied at an advanced level. (5 units)

### *150. Philosophy of Religion*

Philosophical inquiry, based on both classical and contemporary views, as to whether the existence of God can be rationally demonstrated, whether it is compatible with evil, how human beings relate to God, the nature of faith, and the nature of religious language. (5 units)

### *151. Philosophical Topics in Literature and Film*

An investigation of selected films and literary works as sources of insight into a variety of philosophical issues. Topics considered may include the limits of human rationality, absurdity, human suffering, the nature of reality, freedom and determinism, and philosophy of religion. Readings from traditional and contemporary philosophical sources. (5 units)

### *152. Symbolic Logic*

Study of various topics in modern symbolic logic. *Prerequisite: PHIL 27 or permission of instructor.* (5 units)

### *154. Philosophy of Law*

Proper limits and uses of the criminal law in regulating human behavior. (5 units)

### *155. Aesthetics*

Philosophical examination of the historical development of the concepts of taste and beauty. (5 units)

## ADVANCED-LEVEL COURSES

*Normal prerequisites: two intermediate-level courses.*

### *198. Senior Research Thesis*

Creation of a carefully researched and scholarly paper, under the active direction of a selected member of the department's staff. Of particular value to senior students who intend to pursue graduate studies. (5 units)

### *199. Directed Research*

Tutorial work with demanding requirements for advanced students in particular problem areas not otherwise accessible through courses. *Prerequisite: Previous arrangement with the instructor and department chair.* (5 units)

## DEPARTMENT OF PHYSICS

*Professors Emeriti:* William T. Duffy Jr., Philip T. McCormick
*Professor:* Carl H. Hayn, S.J.
*Associate Professors:* Richard P. Barber Jr., Philip R. Kesten *(Chair)*, Betty A. Young
*Assistant Professors:* John Birmingham, Brian Granger
*Senior Laboratory Instructor:* William O. De Hart

The Department of Physics offers major programs of lecture and laboratory instruction leading to the Bachelor of Science in Physics and the Bachelor of Science in Engineering Physics. The department also provides an academic minor in physics and required and elective courses for students majoring in other fields.

The usual career goals of a physics major include professional scientific employment by industry, government, or a university, or secondary school teaching in physical science. The undergraduate major program in physics is appropriate preparation for graduate study in physics, astronomy and astrophysics, biophysics, environmental science, geological science and geophysics, medical physics and medicine, patent law, physical science teaching, and oceanography.

The engineering physics major, particularly appropriate for the applied science student who wishes to do research and development, covers a broad spectrum of courses in mathematics, engineering, and physics. In view of today's rapidly changing technology, the assignments of young engineers or physicists employed by industry will likely involve new technologies. This program emphasizes, to a greater extent than the traditional engineering major, the physics fundamentals that are applicable to the new technologies, as well as to the more established ones. The engineering physics program is appropriate preparation for graduate study in physics, applied physics, and the various engineering disciplines.

## REQUIREMENTS FOR THE MAJOR AND MINOR

### Bachelor of Science in Physics

The physics major must fulfill the University Core Curriculum and College requirements and the following departmental requirements:

1. CHEM 11 and 12
2. MATH 10, 11, 12, 13, 21, and 22
3. PHYS 31, 32, 33, 34, and associated labs
4. A series of intermediate-level courses in the subject areas of electronics, classical mechanics, electromagnetism, thermal physics, optics, mathematical physics, and quantum physics. The major program consists of PHYS 70, 101, 102, 111, 112, 116, 120, 121, 122, 131, 132, 151, 152, and 153.
5. For graduate study in physics or related fields, additional elective physics and mathematics courses and research participation are recommended.

PHYS 116 and 122 are taught as Capstone courses.

Consult *Information for Physics and Engineering Physics Majors* regarding a special curriculum for students who are preparing for careers in biophysics, medical physics, or medicine.

For students with broad interests crossing into other disciplines, such as biology, chemistry, computer science, electrical engineering, mathematics, or philosophy, specialized curricula should be developed in consultation with the student's departmental faculty advisor.

### Bachelor of Science in Engineering Physics

The engineering physics major must fulfill the University Core and College requirements, with the modification that this major requires a minimum of 197 quarter units in an approved curriculum. Curricula are approved by the Engineering Physics Committee headed by Professor Young. The departmental program requirements are listed below.

1. CHEM 11 and 12; MATH 11, 12, 13, and 21; AMTH 106 or MATH 22
2. PHYS 31, 32, 33, 34, and associated labs, 70, 101, 102, 111, 112, and 131
3. COEN 6 or MATH 10; ELEN 110 and 115; MECH 121 or PHYS 120; MECH 122; CENG 41* and 43 (*CENG 41 is waived for students with AP credit for PHYS 31 and students who earn a B or higher in PHYS 31)
4. Elective courses in engineering and/or science directed toward a special emphasis area (typically five courses)

As an example, the mechanical emphasis includes MECH 123, MECH 151, AMTH 118, and two electives drawn from upper-division mechanical engineering or mathematics courses and approved by the student's engineering physics advisor.

There are defined emphasis areas in computational physics, electronics, material science, mechanical engineering, and solid state science. In addition, students may

propose a set of emphasis courses in some other area of interest, in consultation with and approval of the engineering physics program director.

PHYS 116 is taught as a Capstone Course; although not required, it is highly recommended.

### Minor in Physics

The minor in physics requires completion of PHYS 31, 32, 33, and 34; and any four additional physics courses except 1, 2, 3, 8, 9, 11, 12, 13, 198, and 199.

## PREPARATION IN PHYSICS FOR ADMISSION TO TEACHER TRAINING CREDENTIAL PROGRAMS

The State of California requires that students seeking a credential to teach physics in California secondary schools either pass a subject area examination or successfully complete a state-approved Subject Matter Preparation Program in the sciences. The Department of Physics offers a state-approved program with a physics concentration that satisfies the subject matter competency requirement for teaching physics at the secondary level. The science subject matter program with a physics concentration satisfies the requirements for a Bachelor of Science degree in Physics but includes some specific additional courses many of which also meet University and College Core requirements. These include:

1. Introductory biology sequence: BIOL 21, 22, 23, 24, and 25
2. Introduction to Earth Sciences (PHYS 9) and Geology (CENG 20)
3. Introduction to Secondary School Teaching: Practicum (EDUC 98B/198B) and Introduction to Teaching in a Multicultural Society (EDUC 163)
4. One from the following: Philosophy and Science (PHIL 140), Issues in Theology and Science (TESP 151), Religion, Science, and the Environment (TESP 173)
5. One ethics course from the following: Ethics in Technology (ENGR 19), Ethical Issues in Medicine (PHIL 7), Ethics and the Environment (PHIL 9), or Science, Technology, and Ethics (PHIL 117)
6. One technology course from the following: Understanding Digital Technology (COEN 1), From Telegraph to the Internet (ELEN 10), Use of Computers in Chemistry (CHEM 120), Introduction to Computing and Applications (MATH 3) or Introduction to Computer Science (MATH 10)
7. One course on the U.S. Constitution from: Colonies and Constitution (HIST 7), United States: The 19th Century (HIST 8), or Revolution, Confederation, Constitution (HIST 170)
8. One visual and performing arts course: Public Speaking (COMM 20)

In addition, students must complete related fieldwork and an individual portfolio to be reviewed by the single subject matter program coordinator. Because the requirements are very specific, students who are contemplating secondary teaching should consult with the Chair of the Department of Physics as soon as possible. The secondary teaching credential additionally requires the completion of an approved credential program which can be completed as a fifth year of study and student teaching or through an undergraduate summer program and internship.

## STUDENT RESEARCH OPPORTUNITIES

Research in the department is currently funded by the National Science Foundation and Research Corporation. Majors in physics, engineering, and engineering physics participate in faculty research projects through PHYS 198 (Undergraduate Physics Research) and PHYS 199 (Directed Readings in Physics). In addition, advanced students have opportunities for part-time employment assisting faculty in laboratory and related teaching activities.

## LOWER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *1. Hands-On Physics!*

Emphasizes hands-on experience with scientific methods of thought and investigation. Students build models to gain an understanding of fundamental physics principles. Includes term research projects in which students design experiments, collect and analyze data, and present results. Fall and winter quarters. (4 units)

### *2. Introduction to Astronomy: The Solar System*

An introduction to astronomy with a particular focus on the origin and evolution of the solar system, and planets and their satellites. Topics include a brief history of the science of astronomy, telescopes and observational methods, gravitation, spectra and the sun, asteroids, comets, astrobiology, and searches for new planetary bodies and extraterrestrial life. Special emphasis is given to the Earth as a planet, with comparisons to Mars and Venus. Fall and spring quarters. Students should be familiar with arithmetic and basic algebra. Observational lab meets five times during the quarter. (4 units)

### *3. Introduction to Astronomy: The Universe*

An introduction to astronomy with a particular focus on the origin and evolution of the universe, galaxies, and stars. Topics include a brief history of the science of astronomy, telescopes and observational methods, gravitation, spectra and the sun, black holes, nebulae, the big bang, and the expansion and ultimate fate of the universe. Special emphasis is given to theories of the cosmos from Stonehenge to the present. Fall and spring quarters. Students should be familiar with arithmetic and basic algebra. Observational lab meets five times during the quarter. (4 units)

### *8. Introduction to Space Sciences*

An introduction to space exploration and how observations from space have influenced our knowledge of Earth and of the other planets in our solar system. This is synthesized within the context of the field of astrobiology, an interdisciplinary study of the origin of the Universe and the evolution and future of life on Earth. Winter and spring quarters. (4 units)

### *9. Introduction to Earth Science*

Overview of geology and its significance to man. Earthquakes, volcanism, plate tectonics and continental drift, rocks and minerals, geologic hazards, mineral resources. Emphasis on basic geologic principles and the role of geology in today's world. Winter and spring quarters. (4 units)

### *11. General Physics I*

Vectors. Newtonian law of motion. Law of gravitation. Work. Kinetic and potential energy. Momentum and impulse. Rotational energy and momentum. Kepler's Laws. Torque. Equilibrium. Elastic deformation of solids. Density and pressure of fluids. Bernoulli's principle. Buoyant forces. Surface tension. Fall quarter. *Prerequisites: Basic algebra and trigonometry. The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (4 units) NCX†

### *12. General Physics II*

Temperature scales. Thermal expansion of solids and liquids. Thermal energy. Heat transfer. Specific heat. Mechanical equivalent of heat. Work and heat. Laws of thermodynamics. Kinetic theory of gases. Ideal gas law. Entropy. Vibration and wave motion. Hooke's law. Electric fields and potential. Ohm's law. Potential difference. Electric potential. Energy stored in capacitors. Electric current. Resistance and resistivity. Electric energy and power. Kirchhoff's Rules. RC circuits. Lab.Winter quarter. *Prerequisite: PHYS 11. The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (5 units) NCX†

### *13. General Physics III*

Magnetism. Magnetic force on a current carrying conductor. Torque on a current loop. Motion of a charged particle in a magnetic field. Ampere's Law. Magnetic field of a solenoid. Induced EMF. Faraday's Law of Induction. Lenz's Law. Self inductance. RCL series circuit. Power in an AC circuit. Resonance. Transformers. Optics: reflection, refraction, mirrors, and lenses. Total internal reflection. Diffraction. Youngs's double slit interference. Polarization. Optical Instruments. Relativity. Wave-particle duality. Photoelectric effect. X-rays. Pair production and annihilation. Bohr Atom. Spectra. Uncertainty principle. Quantum numbers. Radioactivity. Nuclear particles and reactions. Lab. Spring quarter. *Prerequisite: PHYS 12. The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (5 units) NCX†

### *31. Physics for Scientists and Engineers I*

Measurement. Vectors. Straight-line kinematics. Kinematics in two dimensions. Laws of inertia, mass conservation, and momentum conservation. Center-of-mass and reference frames. Force. Newtonian mechanics and its applications. Work and kinetic energy. Potential energy and energy conservation. Rotational dynamics. Statics. Winter quarter. *Prerequisite: MATH 11. (MATH 11 may be taken concurrently.) The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (4 units) NCX†

### *32. Physics for Scientists and Engineers II*

Simple harmonic motion. Gravitation. Kepler's Laws. Fluids. Waves. Thermal properties and kinetic theory of gases. Interference, diffraction, and polarization. Thermodynamics. Spring quarter. *Prerequisites: MATH 12 and PHYS 31. (MATH 12 may be taken concurrently.) The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (4 units) NCX†

### *32A. Physics for Scientists and Engineers II, Accelerated*

Simple harmonic motion. Gravitation. Kepler's Laws. Fluids. Waves. Thermal properties and kinetic theory of gases. Interference, diffraction, and polarization. Thermodynamics. Advanced topics as time permits. This course is an accelerated version of PHYS 32. Spring quarter. *Prerequisites: MATH 12 and PHYS 31. (MATH 12 may be taken concurrently.) The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit. Enrollment by permission of instructor.* (4 units) NCX†

† Exempted from challenge

### *32L. Physics for Scientists and Engineers II Laboratory*

Measurement theory. Statistical reduction of data. Computer graphing techniques. Experiments directly related to Newton's Laws and to conservation laws. Experiments in periodic motion. Mechanical equivalent of heat. Use of oscilloscope. Lab quizzes. Spring quarter. *Prerequisite: PHYS 32 (usually taken concurrently).* (1 unit) NCX†

### *33. Physics for Scientists and Engineers III*

Electrostatics. Gauss's Law. Potential. Capacitance. Electric current. Resistance. Kirchhoff's rules. DC circuits. AC circuits. Magnetic force. Electromagnetic induction. Geometrical optics. Fall quarter. *Prerequisite: PHYS 32. The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit.* (4 units) NCX†

### *33A. Physics for Scientists and Engineers III, Accelerated*

Electrostatics. Gauss's Law. Potential. Capacitance. Electric current. Resistance. Kirchhoff's rules. DC circuits. AC circuits. Magnetic force. Electromagnetic induction. Geometrical optics. Advanced topics as time permits. This course is an accelerated version of PHYS 33. Spring quarter. *Prerequisites: MATH 12 and PHYS 31. (MATH 12 may be taken concurrently.) The PHYS 31/32/33 sequence and the PHYS 11/12/13 sequence cannot both be taken for credit. Enrollment by permission of instructor.* (4 units) NCX†

### *33L. Physics for Scientists and Engineers III Laboratory*

Experiments with simple circuits involving capacitors and resistors. Experiments in magnetism and circuits involving inductors. Geometrical optics and computer ray tracing. Lasers. Lab quizzes. Fall quarter. *Prerequisite: PHYS 33 (usually taken concurrently).* (1 unit) NCX†

### *34. Physics for Scientists and Engineers IV*

Special relativity. Historical development of modern physics: black body radiation, photoelectric effect, Compton scattering, X-rays, Bohr atom, DeBroglie wavelength, Heisenberg uncertainty principle. Quantum waves and particles. Schrödinger equation. Nuclear structure and decay. Particle physics. Semiconductors. Lab. Winter quarter. *Prerequisite: PHYS 33.* (5 units) NCX†

### *70. Electronic Circuits for Scientists*

Linear electric circuits. DC analysis, network theorems, phasor AC analysis. Diode circuits. Physics of p-n junction. Junction diodes, field-effect devices, bipolar junction transistors. Elementary amplifiers. Logic gates, digital integrated circuits, Boolean algebra, registers, counters, memories. Operational amplifier circuits. Small-signal device models. Linear amplifier device models. Linear amplifier bias circuits and small-signal equivalent circuits. Winter quarter. *Prerequisite: PHYS 33.* (5 units)

### *97. Practicum in Observational Astronomy*

For participants in the observational astronomy program carried out in the Ricard Memorial Observatory. Students meet regularly with the faculty advisor to design and implement ongoing projects. Students learn and improve their skills in using the telescopes and other scientific apparatus, and expand their knowledge of astronomy. Graded P/NP only. May be repeated for credit. Offered fall, winter, and spring. (1 unit)

† Exempted from challenge

## UPPER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

### *101. Analytical Mechanics I*

Vector calculus, and coordinate transformations. Particle kinematics and Newtonian dynamics. Oscillations. Central forces. Systems of particles. Fall quarter. *Prerequisite: PHYS 131.* (5 units)

### *102. Analytical Mechanics II*

Rigid body mechanics. Calculus of variations. Methods of Lagrange and Hamilton. Stability and coupled oscillators. Elastic bodies. Winter quarter. *Prerequisite: PHYS 101 or CENG 42.* (5 units)

### *111. Electromagnetic Theory I*

Vector analysis. Electrostatic fields. Laplace's and Poisson's equations. Multipole expansion. Dielectrics. Magnetostatics. Winter quarter. *Prerequisites: PHYS 33 and PHYS 131.* (5 units)

### *112. Electromagnetic Theory II*

Magnetic materials. Induced electromotive forces. Maxwell's equations. Energy and momentum in electrodynamics. Electromagnetic waves. Reflection and refraction. Guided waves. Dipole radiation. Spring quarter. *Prerequisite: PHYS 111.* (5 units)

### *113. Optics*

Geometrical optics. Interference. Fraunhofer and Fresnel diffraction. Optical instruments. Polarization. Crystal optics. Selected topics from contemporary optics. Lab. Winter quarter. Offered alternate years. *Prerequisite: PHYS 33.* (5 units)

### *116. Physics of Solids*

Crystal structure. Phonons. Free electron theory of metals. Band theory of solids. Semiconductors. Magnetism. Superconductivity. Spring quarter. *Prerequisites: PHYS 120, PHYS 121, and senior standing.* (5 units)

### *120. Thermal Physics*

Laws of thermodynamics with applications to ideal and nonideal systems. Elementary kinetic theory of gases. Entropy. Classical and quantum statistical mechanics. Selected topics from magnetism and low-temperature physics. Fall quarter. *Prerequisite: PHYS 34. Recommended: PHYS 121, PHYS 131.* (5 units)

### *121. Quantum Mechanics I*

Blackbody radiation. Photoelectric effect. Bohn model. Matter waves. Schrödinger equation. Eigenfunctions and eigenvalues. Particle in a box. Harmonic oscillator. Kronig-Penney model. Dirac notation. Operation methods. N-particle systems. Spring quarter. *Prerequisites: PHYS 34 and PHYS 131.* (5 units)

### *122. Quantum Mechanics II*

Three-dimensional Schrödinger equation. Central potentials. Hydrogen atom. Angular momentum. Operators, matrices, and spin. Adding angular momenta. Multielectron atoms. Molecules. Nuclear models. WKB approximation and alpha decay. Winter quarter. *Prerequisite: PHYS 121.* (5 units)

### *131. Methods of Mathematical Physics I*

Linear equations. Matrices. Sets of linear equations. Row reduction. Determinants; Cramer's rule. Lines and planes. Matrix operations. Linear combinations. Linear functions. Linear operators. General theory of sets of linear equations. Special matrices. Orthogonal transformations. Eigenvalues and eigenvectors. Diagonalizing matrices. Applications of diagonalization. Fourier series. Periodic functions. Spring quarter. *Prerequisite: MATH 22 or AMTH 106.* (5 units) NCX†

† Exempted from challenge

### *132. Methods of Mathematical Physics II*

Coordinate transformations. Linear transformations. Scale factors and basis vectors for orthogonal systems. General curvilinear coordinates. Vector operators in orthogonal curvilinear coordinates. Tensor analysis introduction. Numerical Methods: interpolation/extrapolation, integration, ODE's, boundary value problems, and special functions. Fall quarter. *Prerequisite: PHYS 131.* (5 units) NCX†

### *151. Advanced Laboratory I*

First course in a three-quarter sequence. Students perform laboratory-based experiments in the areas of atomic, nuclear, and quantum physics. Emphasis on in-depth understanding of underlying physics, laboratory techniques, data analysis, and dissemination of results. Written and oral presentations. *Prerequisite: Senior standing* (2 units)

### *152. Advanced Laboratory II*

Second course in a three-quarter sequence. Students perform laboratory-based experiments in the areas of atomic, nuclear, and quantum physics. Emphasis on in-depth understanding of underlying physics, laboratory techniques, data analysis, and dissemination of results. Written and oral presentations. *Prerequisite: Senior standing* (2 units)

### *153. Advanced Laboratory III*

Final course in a three-quarter sequence. Design and implementation of an independent research project in physics. Physics 153 is taught as a Capstone Course. *Prerequisite: PHYS 151 or PHYS 152.* (2 units)

### *195. Senior Seminar*

Advanced topics in selected areas of physics. *Enrollment by permission of instructor.* (2 units)

### *197. Practicum in Observational Astronomy*

For participants in the observational astronomy program carried out in the Ricard Memorial Observatory. Students meet regularly with the faculty advisor to design and implement ongoing projects. Students learn and improve their skills in using the telescopes and other scientific apparatus, and expand their knowledge of astronomy. Graded P/NP only. May be repeated for credit. Offered fall, winter, and spring quarters. (1 unit)

### *198. Undergraduate Physics Research*

Departmental work under close professorial direction on research in progress. Permission of the professor directing the research must be secured before registering for this course. *Restricted to physics majors, engineering physics majors, and honors students with a 3.0 or higher grade point average.* Fall, winter, and spring quarters. (1–5 units)

### *199. Directed Reading in Physics*

Detailed investigation of some area or topic in physics not covered in the regular courses; supervised by a faculty member. Permission of the professor directing the study must be secured before registering for this course. *Restricted to students with a 3.0 or higher grade point average.* Fall, winter, and spring quarters. (1–5 units)

† Exempted from challenge

## DEPARTMENT OF POLITICAL SCIENCE

*Professors:* Jane L. Curry, Janet A. Flammang, Dennis R. Gordon, Eric O. Hanson, Timothy J. Lukes
*Associate Professors:* Gregory P. Corning, Ross A. Miller, Peter I. Minowitz, Terri L. Peretti *(Chair)*, William J. Stover
*Assistant Professors:* Elsa Y. Chen, Leslie C. Gray, James S. Lai, Joseph C. Sands, S.J.
*Patrick A. Donohoe, S.J., Professor:* Eric O. Hanson

The Department of Political Science introduces students to the analysis of political behavior, values, institutions, and governments. It also offers preparation for various graduate and professional studies and for careers in public service.

### REQUIREMENTS FOR THE MAJOR AND MINOR

In addition to the general University Core Curriculum and College requirements, a student majoring in political science must satisfactorily complete the following:

1. Two mathematics courses, selected from one of the following:
   a. MATH 6, 7
   b. MATH 11, 12
   c. MATH 6, 8
   d. MATH 11, 8; other statistics courses may replace MATH 8.
   e. MATH 30 and 31 may substitute for MATH 11 and 12 respectively.
2. Eleven term courses in political science:
   a. POLI 1, 2, 25, 30 (taken during the freshman and sophomore years, preferably in sequence)
   b. Seven upper-division courses in political science. Of these seven courses, one must be a lecture course from each of these five areas of political science: U.S. Politics, Comparative Politics, International Relations, Political Philosophy, and Applied Quantitative Methods (preferably during junior year). The sixth upper-division course may be chosen from any of these sub-fields. The seventh upper-division course must be a political science seminar taken during the senior year.
3. ECON 5 or equivalent
4. An average grade of C or higher in political science courses

The minor in political science requires completion of any three lower-division political science courses, three upper-division courses, and a seventh upper- or lower-division course. Students should note the lower-division prerequisites for the upper-division courses.

## SPECIAL EMPHASIS PROGRAM

Political science majors may select a pre-law or public sector emphasis. The completion of a special emphasis program may be noted on a student's transcript if the student notifies the department chair and the chair approves the notation. Detailed programs of study listing recommended courses may be obtained from the department chair.

## POLITICAL SCIENCE HONORS PROGRAM

The Political Science Honors Program enhances the regular major by providing a more specialized course of study to prepare highly qualified students for graduate study. All majors who are not seniors and who have completed at least two of the lower division sequence of courses (1, 2, 25, 30) with a GPA of 3.0 or better are eligible to apply. A maximum of 15 students per year are admitted. Admission is determined on the basis of course work, recommendations, and a personal interview with the faculty director.

Honors students are expected to participate in various department-sponsored events, and a representative from the program has full voting status in the deliberations of the department faculty. Participants in the program must complete a senior thesis, fulfill one of three supplemental curriculum requirements (a minor or a second major, ECON 11 and 13, language 21 and 22), and take a highly active role in department affairs. Interested students should consult the Honors Program director.

## EXTERNAL PROGRAMS

The Political Science Department makes available to qualifying students opportunities to participate in a variety of programs that combine practical field experience and academic credit.

These programs involve many levels of political activity:

1. On the international level, the department encourages student participation in the numerous University-approved study abroad programs, especially those with internships.
2. On the national level, Santa Clara is a member school of American University's Washington, D.C., program, in which students receive credit for internships and intensive seminars at the nation's capital.
3. On the local level, the department regularly assists students in arranging academic credit for internships in local politics. Students may work for government agencies, legislative or judicial bodies, political parties, or politically related groups. The department regularly offers courses that combine local internships with classroom work.

## LOWER-DIVISION COURSES

### *1. Introduction to U.S. Politics*

Critical analysis of U.S. political values, institutions, and processes. America's political tradition, the Constitution, the presidency, Congress, the bureaucracy, Supreme Court, elections, political parties, interest groups, mass media, domestic policies, and foreign policy. (4 units)

### *2. Introduction to Comparative Politics*

Government and politics in several modern states. Emphasis on the development of analytical abilities and critical skills in the evaluation of political culture, processes, and institutions. (4 units)

### *25. Introduction to International Relations*

Conceptual models used to analyze international relations, contemporary problems of world politics, and the methods states use to provide peace and security. (4 units)

### *30. Introduction to Political Philosophy*

An exploration of some of the principal themes and questions of political philosophy through the writings of authors such as Plato, Machiavelli, Marx, and Mill. Prominent themes include theory and practice, individual liberty, morality and politics, freedom, obligation, and justice. (4 units)

### *45. Criminal Justice System*

Basic understanding of the U.S. criminal justice system: police, courts, probation, imprisonment, parole, relations with other governmental agencies. Goals, successes, and failures of the system, and possible remedies. (4 units)

### *50. World Geography*

Provides an understanding of world geography through an appreciation of contemporary global problems. Problems include the environmental crisis, international relations, demographic trends, and economic development. Special emphasis on world hunger and the roots of Third World poverty. (4 units)

## UPPER-DIVISION COURSES

Prerequisites for all upper-division courses:

1. For Political Philosophy courses, POLI 30 is required.
2. For International Relations courses, POLI 25 is required.
3. For Comparative Politics courses, POLI 2 is required.
4. For U.S. Politics courses, POLI 1 is required.
5. For Applied Quantitative Methods courses, POLI 1, 2, and 25 are required.
6. For senior course work, at least one upper-division lecture course from the corresponding area (1–4 above) is required.

*Note: In special cases, the instructor of a particular course may make an exception to these requirements.*

## Political Philosophy

### *101. Technology, Nature, and Political Philosophy*

Examination of the interaction of technology with human nature and the natural environment. Authors discussed include Arendt, Baudrillard, Ellul, Galbraith, Haraway, Kant, and Marcuse. (5 units)

### *105. Catholic Political and Social Thought*

Survey of Catholic theories of church-state relations in history and at present. Catholic thought on state authority, forms of government, and purposes of society and the state. Evaluation of socialism, capitalism, and liberalism, from Catholic viewpoints. (5 units)

### *107. American Political Thought I: The Puritan Founding to the Civil War*

Development of American political thought from the Puritan period through the Civil War. Conceptions of freedom, privacy, and public order in the context of the racial, social, and economic development of the American Republic. (5 units)

### *108. American Political Thought II: The Civil War to the Present*

Development of American political conceptions from the late 19th century to the present. Focus on questions of social order, urbanization, the role of the state, violence and social reform, and racial and industrial justice. (5 units)

### *111. History of Political Philosophy I: Greek and Christian*

Development of Western political thought from its Greek origins in the work of Plato and Aristotle through the work of Aquinas. (5 units)

### *112. History of Political Philosophy II: Liberalism and Its Roots*

Western political thought from Machiavelli through the origins of liberalism in the writings of Hobbes, Locke, and Rousseau. (5 units)

### *113. History of Political Philosophy III: Post-Liberal Theories*

Writers and themes in 19th- and 20th-century political thought including Marx, Nietzsche, Freud, and Lenin. (5 units)

## International Relations

### *119. The European Union*

Evolution of European political, social, and economic integration in the post-war period. Emphasis on the institutions and politics of the European Union since the Maastrict treaty, and current issues of European integration such as the addition of new members, monetary union, and internal democratization. (Fulfills upper-division requirement of International Relations or Comparative Politics.) (5 units)

### *120. Mass Media, Information Technology, and International Politics*

Use of computer-based simulations and multimedia sources to understand international negotiation and foreign policy decision making. (5 units)

### *121. International Political Economy*

An introduction to the politics of the world economy. Topics include: Liberalism, Realism, and Structuralism as competing approaches to political economy; regionalism, and globalization; the international trading and financial systems; multinational corporations; development and debt. (5 units)

### *122. Far Eastern International Relations*

International political developments in the Far East from 1900 to the present. Analyses of geographic environment, political forces, and the impact of differing cultures on governmental decision making. *Prerequisites: POLI 2 or 25.* (5 units)

### *123. Japanese Foreign Policy*

An overview of Japan's emergence as an Asian power from 1868 to World War II, followed by more detailed examination of the diplomatic, trade, and security dimensions of postwar Japanese foreign policy. Particular emphasis on U.S.-Japan relations. (5 units)

### *124. Law, Security, and Force*

An examination of traditional international legal principles involving the use of force in self defense with case studies to understand how the justification of armed conflict is changing. Discussion of the international community's adjustment to the evolving nature of sovereignty, increasing globalization, and national defense. (5 units)

### *125. International Law*

Sources, nature, and functions of international law in world politics. Special attention to the subjects of international law, international transactions, and the rules of war. Viewpoints presented from Western, socialist, and Third World perspectives. (5 units)

### *126. International Organization*

International organization in world affairs. Political, economic, and social role of the United Nations, regional organizations, specialized agencies, and nonstate transnational actors. (5 units)

### *127. Comparative Foreign Policies*

Comparative study of the foreign policies of selected nation-states. Interaction of international and domestic politics in foreign policy formulation and implementation. (5 units)

### *128. U.S. Foreign Policy*

Aims, formulation, and implementation of U.S. foreign policy since World War II, focusing on diplomacy, war, security, and trade. (5 units)

### *129. Foreign Policies of Post-Communist States*

The aims, formulation, and implementation of Russian foreign policy since World War II, focusing on the transition out of the Cold War and Russia's attempts to balance its desire to join the world with its need to hold on to its traditions. (5 units)

### *130. Global Environmental Change*

Explores how humans have transformed the global environment by examining topics of global warming, deforestation, biodiversity loss, desertification, and water degradation. Presents environmental science as well as political and socio-economic dimensions of these problems. (5 units)

## Comparative Politics

### *131. The Military and Politics*

Case study of wars in Vietnam to understand civil-military relations, the causes of military intervention, legitimacy-building efforts, and withdrawal from politics. (5 units)

### *132. The Cold War*

The origins, evolution, and aftermath of the wide-ranging struggle—among the United States, the Soviet Union, and their allies—that dominated politics in the second half of the 20th century. (5 units)

### *133. Parties and Elections in Democracies: United States and Europe*

An examination of how different parties have emerged and work, as well as how different electoral systems work and what difference each makes to the process of politics. A look at parties in campaigns as well as parties in power. Treats the American and Western European systems, as well as the new democracies of Eastern Europe. (5 units)

### *134. Race and Ethnicity in the Politics of Developed States*

The role of racial/ethnic identity and conflict in the politics of states such as Germany, South Africa, the United States, the former Soviet Union, and the former Yugoslavia. (5 units)

### *135. Asian Political Economy*

Comparative political economy of Northeast Asia with country studies of Japan, "The Four Tigers," and China. Emphasis on economic development in the period following World War II, including the "Asian Miracle" and the "Asian Meltdown." (5 units)

### *136. Politics in Central America and the Caribbean*

Political cultures, processes, and institutions of Mexico and selected Central American and Caribbean states. Governmental organization, dependency, development, and political violence.

### *136A. The Political Structures and Processes in El Salvador and Central America*

This course, offered through the Casa de la Solidaridad in El Salvador, examines the governmental institutions and political processes in Central America. Topics include forms of government, the role of political parties, electoral systems, and local government. Taught in Spanish. (5 units)

### *137. Politics in South America*

An overview of political development in selected South American countries. Emphasis on democratic institutions, political participation, social inequality, and economic adjustment. (5 units)

### *138. Politics in Brazil*

An examination of democracy and inequality in Brazil. Emphasis on religious traditions, authoritarian legacies, social movements, state reform, and public policy-making. (5 units)

### *139. Religion and Politics in the Third World*

A comparison of the relationships between religion and politics in Asia, Latin America, and the Middle East. Emphasis on the current political influence of traditional organization and belief. (5 units)

### *140. Politics in Less-Developed Countries*

Multidisciplinary study of the problems and politics of political development in Latin America, Africa, and/or Asia. Case studies of communist and capitalist approaches to political development. Impact of international politics on internal development. (5 units)

### *142. Politics in the Middle East*

Designed to give students an understanding of the complexities of Middle East politics, the importance of the region to the world, and the role history and religion have played in the political and social development of the various countries in the region. (5 units)

### *143. Comparative Political Leadership*

How leaders mobilize their nations and shape the formation of public policies. (5 units)

### *144. Women and Politics in Europe*

Course analyzes the democratic characteristics in European politics through the lens of women. It explores how social expectations, political institutions, and the European Union have influenced the participation of European women in politics in the late 20th century. It seeks to solve the puzzle of why women are more active and better represented in many European governments than in the United States. The Western European experiences are compared to women's roles in politics in Central Europe before and after the fall of communism. (5 units)

### *145. Politics of Former Communist States*

An examination of the communist era in the former Soviet Union and the transformation that resulted from its failures. Emphasis on political economy, ethnic relations, and the development of democratic institutions in the new states. (5 units)

### *146. African Politics*

The problems of nation-building and economic development in sub-Saharan Africa. Case studies of Kenya and Tanzania. (5 units)

### *147. Politics in Japan*

An overview of politics and political economy in modern Japan. The course emphasizes the role of history and culture in shaping postwar political institutions; the interaction of political parties and the bureaucracy in policymaking; and the role of the state in economic development. (5 units)

### *148. Politics in China*

Origins of revolution in modern China, the politics of social and economic modernization in China since 1949, the problems of bureaucratization, political participation, and the succession to Mao Zedong. (5 units)

### *149. Special Topics in Comparative Politics*

Selected topics in comparative politics. (5 units)

## U.S. Politics

### *150. The Presidency*

Analysis of the presidency as it has evolved throughout U.S. history. Comparison of presidential powers with those of Congress, the courts, the bureaucracy, the press, political parties, and the public. (5 units)

### *151. The Congress*

History, structure, and policies of Congress. Congressional elections and theories of representation, the committee system and congressional norms, lobbying, congressional ethics and reforms, and the power of Congress relative to the president and the bureaucracy. (5 units)

### *152. Political Participation*

An examination of who participates in U.S. politics and the various forms of political participation. Elections, political parties, interest groups, community organizing, and political protest. (5 units)

### *153. Minority Politics in the United States*

This survey course focuses on the historical and contemporary struggles of minority groups in the United States. The minority groups analyzed comparatively within a political and institutional context are African Americans, Latinos, Asian Americans, Native Americans, minority women, gays, and the physically disabled. Various issues include theories of race, ethnicity, gender, and class to understand how these variables serve as a basis for identification and political mobilization in American politics. (5 units)

### *154. Women and Politics*

A consideration of the various ways women have changed "politics as usual." Examination of the status of women today, varieties of feminist thought, women as voters and as an interest group, women in public office and public policy issues. (5 units)

### *156. Politics and Mass Media*

Impact of mass media on political values, attitudes, behavior, and decisions. (5 units)

### *159. The Constitution and Liberty*

Constitutional law doctrines and decisions regarding civil liberties. Topics include freedom of speech and association, freedom of the press, religious freedom, and reproductive freedom. (5 units)

### *160. The Constitution and Equality*

Constitutional law doctrines and decisions regarding equal protection of the laws. Topics include race discrimination (particularly school desegregation and affirmative action), sex discrimination, discrimination against the poor, and discrimination based on sexual orientation. (5 units)

### *161. Law and Politics in the United States*

Examination of the U.S. legal system. Topics include legal culture, the adversary system and its alternatives, system participants (litigants, lawyers, and judges), judicial selection, and legal versus political influences on judicial decision making. Special attention to the question of the capacity of courts to serve as agents of social change. (5 units)

### *162. Urban Politics*

Examination of political processes in the U.S. city. Special attention to the structures and institutions of urban political power and the changing forms of political action. Discussion of the historical development of urban social life, political cultures, racial/ethnic and class communities, political economy, and urban planning. (5 units)

### *163. State and Local Politics*

A consideration of the politics and processes of state and local governments, with particular attention given to California state, county, and municipal politics. Topics include federalism, executives, legislatures, courts, interest groups, parties, elections, financing, and issues such as education, welfare, criminal justice, transportation, housing, and urban growth. (5 units)

### *165. Public Administration*

Administration of public policies in terms of broad questions of democratic theory. Organizational theory, public employees, budget making, policy evaluation, and public finance. (5 units)

### *167. The Making of Public Policy*

An examination of the nature of U.S. public policy and policy analysis through the use of texts and case studies. Stages of policy development (how an idea becomes a policy, agenda-setting, implementation, analysis and evaluation). Ethical issues in public policy. (5 units)

### *168. Special Topics in Public Policy*

Substantive in-depth study of selected issues in U. S. public policy, such as health care, criminal justice, housing, social welfare, and education. (5 units)

## Applied Quantitative Methods

### *170. Research Methods in Political Science*

An introduction to some of the competing theories, paradigms, and methods used to analyze politics. After a general discussion of the philosophy of science—especially the debate about whether a "science" of politics is possible—students examine various approaches to the study of politics, including case studies, historical analysis, formal theories, and statistical models. (5 units)

### *172. Research Methods in International Relations*

An introduction to the development and application of statistical models of international relations. After a review of substantive issues in the field, students examine the research designs used to evaluate theories of international conflict and cooperation. (5 units)

### *173. Research Methods in Comparative Politics*

An introduction to the literature of comparative politics that is primarily, but not exclusively, based upon empirical data. After a review of some important ideas about research designs, data generation, and data analysis, students learn how to develop and apply statistical models. (5 units)

### *174. Research Methods in American Political Behavior*

An exploration of the U.S. electorate, with special attention to analyzing factors that prompt individuals to vote in particular ways. Techniques of quantitative political analysis, including the computerized manipulation of survey research data. (5 units)

## Senior Course Work

### *180. Honors Research Projects*

Independent research and writing on a selected topic or problem. Limited to members of the Political Science Honors Program. (5 units)

### *183. Seminar in Comparative Politics*

Selected topics in comparative politics in various states and regions. (5 units)

### *185. Seminar in U.S. Politics*

Selected topics and problems in the American political system. (5 units)

### *190. Seminar in Research Methods*

Plan and conduct political science research on selected topics such as political communication and socialization. (5 units)

### *191. Seminar in Political Philosophy*

An examination of Frank Herbert's Dune series and other science fiction classics, focusing on politics, war, religion, multiculturalism, and ecology. (5 units)

### *192. Seminar in Political Philosophy*

Discussion and analysis of the relationship between politics and aesthetics. Special emphasis on the aesthetic theories of Kant, the Dadaists, the Socialist Realists, and Herbert Marcuse. (5 units)

### *196. Seminar in International Relations*

Selected aspects of international political behavior. (5 units)

## Public Sector Studies

### *45. Criminal Justice System*

Basic understanding of the U.S. criminal justice system: police, courts, probation, imprisonment, parole, relations with other governmental agencies. Goals, successes, and failures of the system, and possible remedies. (5 units)

### *164. Studies in Public Policy*

Selected topics and problems in public policy viewed from a "political insider's" perspective. Taught by a political practitioner. (2 units)

### *167. The Making of Public Policy*

An examination of the nature of U.S. public policy and policy analysis through the use of texts and case studies. Stages of policy development (how an idea becomes a policy, agenda-setting, implementation, analysis, and evaluation). Ethical issues in public policy. (5 units)

### *168. Special Topics in Public Policy*

Substantive in-depth study of selected issues in U. S. public policy, such as health care, criminal justice, housing, social welfare, and education. (5 units)

### *181. Silicon Valley Politics*

This seminar focuses on the politics of the Silicon Valley region within the context of California state politics. The major case studies address the challenges facing local governments particularly in the areas of housing, environment, technology, and transportation policies. (2 units)

### *197A. Public Sector Study and Internship*

Directed internship in local government agencies, legislative bodies, political parties, interest groups, public or government affairs departments of corporations, or nonprofit organizations, integrated with classroom analyses of professions in public sector, frequent guest speakers, and research project. *Open to qualified juniors and seniors with permission of the instructor.* (5–15 units)

### *197B. Public Sector Study and Internship*

Directed internship in local government agencies, legislative bodies, political parties, interest groups, public or government affairs departments of corporations, or nonprofit organizations, integrated with classroom analyses of professions in public sector, frequent guest speakers, and research project. *Open to qualified juniors and seniors with permission of the instructor.* (5–15 units)

### *198. Public Service Internships*

Directed internship in government agencies, legislative bodies, political parties, or interest groups, public or government affairs departments of corporations, or nonprofit organizations. *Open to qualified juniors or seniors with permission of the instructor.* (5–10 units)

## Special Courses

### *199. Directed Reading*

Independent study. Intensive work in areas not fully covered in upper-division courses. *Written outline of the proposed course, with signatures of the sponsoring instructor and department chair, must be submitted to the Office of the Dean at least one week prior to registration.* The student's copy of the approved form must be presented when the student registers. Forms are available at the Student Records Office. (1–5 units)

## DEPARTMENT OF PSYCHOLOGY

*Professors Emeriti:* Roland C. Lowe, Marvin L. Schroth
*Professors:* Jerry M. Burger, Robert Numan, Thomas G. Plante, Eleanor W. Willemsen
*Associate Professors:* Tracey L. Kahan *(Chair)*, Gerdenio M. Manuel, S.J., Patricia M. Simone, Kieran T. Sullivan, Timothy C. Urdan
*Assistant Professors:* Matthew C. Bell, Ryan B. Olson

Psychology is the study of behavior, emotion, and thought using techniques modeled on the scientific method. At the undergraduate level, the study of psychology is part of a liberal education. A major in psychology lays the groundwork for various advanced studies, including the pursuit of graduate degrees needed for the professional practice of psychology.

### REQUIREMENTS FOR THE MAJOR

Students majoring in psychology must fulfill the University Core Curriculum and College requirements and satisfactorily complete the following courses:

***Lower-Division Courses in Psychology (four courses)***

PSYC 1, 2, 40, 43

***Lower-Division Courses Outside of Psychology (two courses)***

MATH 6 and 7 or MATH 11 and 12

***Upper-Division Courses in Psychology (eight courses)***

1. One class from each of the following five content areas:
   a. Biological: PSYC 165, 166, or 167
   b. Developmental: PSYC 185, 187, or 196
   c. Applied: PSYC 115, 117, or 157
   d. Social/personality: PSYC 150 or 160
   e. Learning/cognition/perception: PSYC 120, 130, or 131
2. Capstone Course Requirement: During their senior year, psychology majors must complete one course from among 118, 168, 170, or 195. In special cases, a student may meet the Capstone requirement by conducting an independent research project. Students who select this option must enroll in PSYC 199C. They also must submit a proposal and receive permission from a supervising faculty member and the department chair by the end of the seventh week of the quarter prior to the quarter they enroll in PSYC 199C.
3. Two additional upper-division psychology courses

## SPECIAL EMPHASIS PROGRAMS

### Psychobiology

In addition to the Bachelor of Science and departmental requirements, students who wish to study neuroscience may elect the psychobiology concentration. The following requirements incorporate the psychology major:

1. MATH 11, 12
2. CHEM 11,12, 31, 32
3. BIOL 21, 22, 23, 24, 25
4. Psychology courses as listed in "Requirements for Major"

### Gerontology

In addition to the Bachelor of Science and departmental requirements, students who wish to study the process of aging should inquire about the Gerontology Certificate Program.

## LOWER-DIVISION COURSES

*Note: For courses that charge fees, see the* Undergraduate Schedule of Classes.

#### *1. General Psychology I*

The scientific study of behavior. Topics include the physiological basis of behavior, sensation and perception, conditioning and learning, memory, motivation, and emotion. Other topics may include language, problem solving, sleep and dreaming, and consciousness. (4 units)

#### *2. General Psychology II*

The scientific study of behavior. Topics include human development, personality, abnormal psychology, clinical intervention, and social psychology. Other topics may include psychological assessment, cross-cultural psychology, and psychological adjustment. (4 units)

#### *1H. Honors Colloquium*

Restricted to students in the University Honors Program. The honors version of PSYC 1. (4 units)

#### *2H. Honors Colloquium*

Restricted to students in the University Honors Program. The honors version of PSYC 2. (4 units)

#### *40. Statistical Data Analysis*

An introduction to statistical methods used in psychological research. *Prerequisites: declared psychology majors and MATH 6 or 11.* Lab fee. (4 units)

#### *43. Research Methods in Psychology*

Investigation of methods of psychological research and issues involved in the collection of data. Exercises require designing research projects, collecting data, and writing professional reports. *Prerequisites: PSYC 1 or 2 and 40.* Lab fee. (4 units)

#### *50. Psychology of Adjustment*

The principles of psychology applied to personal growth, interpersonal relationships, and effective functioning. This course is open to all University students. (4 units)

#### *65. Foundations of Behavioral Neuroscience*

A basic introduction to brain structure and function. This course meets the natural science laboratory Core requirement. The course has standard lecture hours, but integrates hands-on laboratory experiential exercises during the class sessions. Lab fee. (4 units)

## UPPER-DIVISION COURSES

*Note: Prerequisites for all upper-division courses, in addition to those listed for specific courses, are 1 and 2, 40, and 43, or permission of instructor. Nonmajors are encouraged to seek permission of instructor.*

### *102. Writing in Psychology*

Development of writing, reading, critical thinking, and literature search skills within traditional formats for communicating scholarship in psychology. The class will cover the use of APA style for experimental reports and literature reviews. In addition to developing communication skills, assignments will emphasize how to interpret experimental findings and evaluate support for hypotheses. Other assignments will require students to synthesize findings from several published studies and draw conclusions about a body of research. *Prerequisites: ENGL 1 and ENGL 2, PSYC 1, 2, 40, and 43.* (5 units)

### *105. Statistics and Experimental Design II*

Advanced topics in theory and methods of statistical analysis and experimental design. Complex analysis of variance and multiple correlation and regression are typically covered. *Prerequisite: Permission of the instructor is mandatory.* (5 units)

### *112. Motivation and Emotions*

Scientific study of the various motivational-emotional processes of people and higher animals. Biological drives, psychological survival needs, altered states of consciousness, social motives, and theories of emotion. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *114. Ethics in Psychology*

The role of ethical behavior and decision making in the field of psychology and related behavioral, medical, and social sciences. Topics include: issues related to competence; integrity; professional, scientific, and social responsibility; respect for others' rights and dignity; and concern for others' welfare. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *115. Abnormal Psychology*

The study of psychology and human behavior in understanding the etiology, nature, development, and treatment of mental illness. Topics include models of abnormal behavior, research, diagnosis, assessment, and treatment of emotional and behavioral disorders, such as affective disorders, personality disorders, sexual disorders, substance abuse disorders, and childhood disorders. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *116. Psychosomatic Medicine*

Psychosomatic medicine involves the role of psychological functioning and human behavior in the development and maintenance of illnesses and medical problems. Topics include the history and perspectives of psychosomatic medicine as well as a wide variety of psychosomatic disorders, such as eating, panic, irritable bowel, ulcer, conversion, trichotillomania, somatoform, Munchausen's syndrome, and others. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *117. Health Psychology*

Health psychology involves the discipline and principles of psychology and human behavior in understanding how the mind and body interact in health and disease. Topics include health promotion and primary prevention of illness, health-enhancing and health-damaging behaviors, psychosomatic illness, stress and coping, pain management, and a variety of specific behavior-related medical illnesses (e.g., heart disease, eating disorders, cancer, and AIDS). *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *118. Advanced Topics in Clinical/ Abnormal Psychology*

The discipline and principles of clinical psychology in understanding the etiology, nature, development, and treatment of behavioral, emotional, and relational problems. Topics include the history of clinical psychology, theoretical models, assessment and intervention approaches, specialization, ethics, and current trends. Meets Capstone requirement. *Prerequisite: PSYC 115 and is restricted to senior psychology majors only.* (5 units)

### *120. Perception*

A theoretical and empirical investigation of human perceptual processes, with an emphasis on visual perception. Topics include: psychophysiology of vision; perceiving visual space (shape, contrast, orientation, distance, depth, motion); color perception; perceptual illusions; development of perception; imagining vs. perceiving; effects of knowledge on perception; perception in "novel" environments. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *130. Psychology of Learning*

The scientific investigation of learning and behavior. Both experimental and related theoretical developments are considered, as well as the application of the basic principles of learning. Students will become familiar with the theory and methods underlying research in learning. Topics include Pavlovian and operant conditioning, stimulus control, schedules of reinforcement, choice, and punishment. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *131. Cognitive Psychology*

A theoretical, empirical, and experiential investigation of human information processing. Topics include the history of the discipline and the following research areas: pattern perception, attention, working memory, long-term memory, memory distortions, imagery, language processes, and problem solving. Emphasis on contemporary theory and research, including recent developments in neurocognition. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *134. Psychology of Education*

Also listed as LBST 134. For course description, see LBST 134. (5 units)

### *135. Psychology of Sleep and Dreaming*

A theoretical, empirical, and experiential exploration of sleep, sleep disorders, and dreaming. Emphasis on physiological, cognitive, neurocognitive, and functional approaches. Topics include: psychophysiology of sleep and dreaming; the purported functions of sleep and dreaming; personal and public health consequences of sleep disorders, sleep deprivation, and sleep debt; continuity in mental processes across the sleep/wake cycle; memory for dreams; approaches to working with dreams; consciousness and dreaming, including lucid dreaming. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *144. Psychological Assessment*

Principles and issues related to testing and measurement in psychology. Topics include test construction, reliability, validity, and the professional and ethical use of psychological tests and test scores. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *150. Social Psychology*

The scientific investigation of social behavior. Topics include communication, attraction, person perception, attitude change, aggression, altruism, and group behavior. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *153. Psychology of Close Relationships*

The scientific investigation of close relationships, drawing from clinical psychology and social psychology. Topics include research methodologies for studying close relationships; theories of attraction, love and marriage; the developmental process of relationships; and interventions for distressed relationships. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *154. Psychology of Women*

An introduction to psychological concepts and theories as they apply to women. Discussion of thinking and behavior as they apply to women. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *155. Psychology and Law*

Explores relevance for law of psychological principles and findings as well as laws pertaining to practice. Topics include eyewitness testimony, legal insanity, jury dynamics, expert testimony, and family law issues. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *157. Industrial/Organizational Psychology*

An introduction to the broad field of Industrial/Organizational (I/O) Psychology, which includes science and practice related to personnel selection and placement, training and development; organizational development; occupational health and safety; work motivation; and various other areas concerned with human behavior in organizational contexts. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *159. Religion in the Theories of Freud and Jung*

Also listed as RSOC 180. For course description see RSOC 180. (5 units)

### *160. Personality*

The study of individual differences and personality processes. Discussion of major theories of personality. Presentation of current research topics in personality and methods for assessing individual differences and other personality constructs. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *162. Cross-Cultural Psychology*

Study of psychology from various cultural perspectives with a view to identifying patterns of behavior that are universal and those that are culturally specific. The course looks at the extent to which American research findings apply to other societies. The class also examines issues that arise in cross-cultural encounters. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *165. Physiological Psychology*

Emphasis on the neuroanatomical, neurochemical, and neurophysiological correlates of motivation, emotion, learning, and memory. Neural regulation of sleep and arousal, mechanisms of drug action, and neuropathology. Brain anatomy and application of physiological techniques to the study of animal behavior. (5 units)

### *166. Human Neuropsychology*

Study of human brain function from an experimental perspective. Addresses questions such as: What are the brain mechanisms that lie at the basis of perception and memory, of speech and thought, of movement and action? What happens to these processes when individual parts of the brain are destroyed by disease? *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *167. Psychopharmacology*

Examination of the effects of various drugs, such as nicotine and alcohol, and abnormal neurochemical states, such as schizophrenia and depression, on mental functioning and behavior. Topics include the effects of various drugs on the brain and the biochemical basis of human neurosis and psychosis. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *168. Advanced Topics in Neuroscience*

An integration from various subdisciplines in psychology with an emphasis on the brain and behavior. Topics include neural development from fetus to early childhood, neural basis of psychopathologies (e.g., schizophrenia and depression), cognitive functions (memory, attention, and learning), and personality and related disorders. Meets Capstone requirement. *Prerequisites: Two upper-division psychology courses and is restricted to senior Psychology majors only.* (5 units)

### *170. History and Systems of Psychology*

Origin and development of modern psychological approaches. Psychoanalysis, behaviorism, Gestalt, humanism, and existentialism. Emphasis on conceptual issues. Focuses on selected topics viewed from the multiple conceptual frameworks and subdisciplinary perspectives that characterize psychology's history. Meets Capstone requirement. *Prerequisites: PSYC 1, 2, 40, and 43 and is restricted to senior Psychology majors only.* (5 units)

### *175. Humanistic Psychology*

Historical and conceptual roots of humanism. Implication of the "third force" for therapy, community living, education, and research. Special attention to humanistic psychotherapies and the application of humanistic principles to education. Three hours per week of community volunteer work required. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *185. Developmental Psychology I*

First course in a sequence of courses that explores the development of individuals during the life cycle. Topics for the sequence include: (1) principles and theories of development; (2) perceptual, cognitive, social, and personality development; (3) family, school, and other societal influences on development; and (4) applied issues in child rearing, education, and other socialization practices. Students have an opportunity to clarify their own values about having and raising children and about the responsibilities of society in general to children. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *186. Developmental Psychology II*

Building on concepts from Psychology 185, a more in-depth examination of topics in child development. Special emphasis on relation between theory and practice. *Prerequisite: PSYC 185.* (5 units)

### *187. Developmental Psychology III*

A focus on development during the second decade of life, from puberty through early adulthood. Topics include: physical, intellectual, and social development; identity; sexuality; changing social contexts; and life transitions. *Prerequisite: PSYC 185.* (5 units)

### *188. Adult Development*

Young adulthood through middle age. Stages and transitions in adult life, the concept of life crisis, and the interplay of situations and personality. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *195. Research Practicum*

Advanced methodological issues taught primarily through direct involvement in an experimental research project. Activities include reviewing the literature, formulating a research question, developing a design and procedure, collecting and analyzing data, and writing a professional research report. Meets Capstone requirement. *Prerequisites: Two upper-division psychology courses and is restricted to senior Psychology majors only.* (5 units)

### *196. Psychology of Aging*

Development in later life. Topics include: (1) theories of aging and development; (2) cognition, perceptual, and social changes in aging; (3) mental health issues in the elderly; and (4) abnormal aging, such as Alzheimer's disease. *Prerequisites: PSYC 1, 2, 40, and 43.* (5 units)

### *198. Internship/Practicum*

Clinical experience in community agencies. Selected readings. Open to upper-division students with an average GPA of 3.0 or higher who have received permission of a faculty sponsor. (2–5 units)

***199. Directed Reading/ Directed Research***

Independent projects undertaken by upper-division students with a faculty sponsor. To receive course credit, the student must submit a formal written proposal and have it approved by the sponsoring faculty member and the department chair. The proposal must be submitted before the end of the previous quarter and must meet University requirements for independent study credit. (1–5 units)

***199C. Directed Reading/ Directed Research***

Capstone independent projects undertaken by upper-division students with a faculty sponsor. To receive course credit, the student must submit a formal written proposal and have it approved by the sponsoring faculty member and the department chair. The proposal must be submitted before the end of the previous quarter and must meet University requirements for independent study credit and requirements for a Psychology Capstone course. (5 units)

## DEPARTMENT OF RELIGIOUS STUDIES

*Professors Emeriti:* Joseph A. Grassi, Anne Marie Mongoven, O.P.
*Professors:* Catherine M. Bell *(Chair)*, Denise L. Carmody, Diane E. Jonte-Pace, John David Pleins, William C. Spohn
*Associate Professors:* Paul G. Crowley, S.J., Paul Fitzgerald, S.J., Frederick J. Parrella, David Pinault, Ana Maria Pineda, R.S.M., James W. Reites, S.J., Philip Boo Riley, Francis R. Smith, S.J.
*Assistant Professors:* Cynthia M. Baker, Thomas M. Beaudoin, James B. Bennett, Robert J. Brancatelli, Michael McCarthy, S.J., Catherine M. Murphy, Carmichael C. Peters
*Adjunct Assistant Professor:* Gregory C. Sharkey, S.J.
*Senior Lecturers:* Margaret R. McLean, Salvatore A. Tassone, S.J., Tennant C. Wright, S.J.
*Bernard J. Hanley Professor:* Catherine M. Bell
*Jesuit Community Professor:* Denise L. Carmody
*Augustine Cardinal Bea, S.J., Distinguished Professor of Theology:* William C. Spohn

The Department of Religious Studies offers courses as part of the University Core Curriculum as well as major and minor programs for those who wish to concentrate in the study of religion and theology.

The aim of the program is to foster an engaged, critical, and integrated understanding of religion in the University's tradition of Jesuit liberal education. Because of the University's commitment to examine diverse religious traditions, the Department of Religious Studies offers a wide breadth of courses; because of the University's commitment to the Catholic tradition, the department also offers a special opportunity for students to examine Catholicism in depth in an academic context.

### REQUIREMENTS FOR THE CORE

Three religious studies courses: (a) two courses on the introductory level and intermediate levels, with the first normally taken during the freshman or sophomore year; and (b) one advanced-level course taken after completing 88 quarter units.

The Religious Studies Department offers courses in three main areas: Scripture and Tradition (SCTR); Theology, Ethics, and Spirituality (TESP); and Religion and Society (RSOC). Students can take courses in any area they wish, either sampling several areas or concentrating in one. However, they must take their three courses in the proper sequence—introductory, intermediate, and advanced. A limited number of courses offered in other departments can fulfill the religious studies requirement. For an updated listing, students should consult the annual *Core Curriculum* handbook.

Introductory-level courses are numbered 1–19 and are offered in each of the three areas. The introductory course should be taken in the freshman or sophomore year. Intermediate-level courses are numbered 20–99 in each of the three areas, and should be taken in the sophomore or junior year after completion of the introductory course. Advanced-level courses are numbered 100–199 in all three areas and, in order to count as the third course in religious studies, must be taken after completion of 88 quarter units.

Elective courses in religious studies can be taken at any time and at any level.

## REQUIREMENTS FOR THE MAJOR AND MINOR

### Major in Religious Studies

The major program is designed to combine flexibility with a solid foundation. To that end students are required to fulfill the following requirements:

***Lower-Division Courses*** Complete four lower-division courses, one from each of three areas: (1) Scripture and Tradition (SCTR); (2) Theology, Ethics, and Spirituality (TESP); and (3) Religion and Society (RSOC), plus one in any area.

***Upper-Division Courses*** Complete eight upper-division courses. Of these eight courses, four must be specifically designated Religious Studies Seminars (RSS), with one in each of the three areas, the fourth in any area. Two to three seminars are offered each quarter for majors and minors.

***Senior Research Paper*** Submit a senior research paper, usually completed under the direction of a faculty member during Fall or Winter quarter of the senior year. The paper must be completed in a religious studies seminar course.

Students interested in a double major should consult the department chair or their religious studies advisor.

### Minor in Religious Studies

The minor in religious studies requires completion of one introductory-level religious studies course (1–19); two intermediate-level courses (20–99); and four advanced-level courses (100–199), one of which must be a Religious Studies Seminar (RSS). Of these seven courses, at least one must be in each of the following areas: (1) Scripture and Tradition (SCTR); (2) Theology, Ethics, and Spirituality (TESP); and (3) Religion and Society (RSOC).

## GRADUATE PROGRAM

The Religious Studies Department also has a Pastoral Ministries Program that offers a master's degree in four areas: catechetics, pastoral liturgy, spirituality, and liturgical music. For more information about the program and a copy of its brochure, contact the *Pastoral Ministries Graduate Program.*

## AREA I: SCRIPTURE AND TRADITION (SCTR)

*Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.*

### *11. Origins of Western Religion*

An introduction to the study of religion through an inquiry into the origins of Western religion. Surveys the principal themes and issues of the formative period of the Judeo-Christian tradition and its historical development to the fifth century. (4 units)

### *19. Religions of the Book*

Examines the history and religious traditions of the Hebrew Bible, giving attention to geography, politics, and belief systems of Judaism, Christianity, and Islam, and their development in history. Focuses on developing appropriate tools for the study of religions. (4 units)

### *20. Bible in the Jewish Tradition*

Was Adam an androgyne (half male-half female)? Did Abraham kill Isaac after all? Jewish biblical interpretation has asked questions like these for over 2,000 years. Examines traditions of Jewish biblical interpretation from their beginnings in antiquity, offering an opportunity not only to appreciate these traditions but also to apply the classical methods to their own readings of biblical texts. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *22. The Synoptic Gospels*

A survey of the Gospels of Mark, Matthew, and Luke in light of the findings of modern scholarship. Special attention given to the relationships among the Gospels, the particular situations of the churches in which they were written, and the special intentions and considerations of the authors. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *23. Christ in the Four Gospels*

Deals with the historical ministry of Jesus, his resurrection, and how his disciples and the church of the New Testament period interpreted Jesus' teaching and developed their beliefs about Christ. Concentrates on the Gospel portrayal of Jesus Christ. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *25. The Bible and Archaeology*

Surveys the historical and archaeological background of the Hebrew Bible and the New Testament. Organized chronologically, covering the major cultural and religious developments in the Holy Land from the Neolithic to the Crusades. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *26. Gender in Early Christianity*

The history of early Christianity is often portrayed as a history of, by, and about men, despite clear indications that women played a prominent role in the early church. Introduces the construction of gender in antiquity, Jewish and Greco-Roman laws and customs, the biblical canon and other Christian texts. Contemporary feminist perspectives will inform the discussion. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *27. Historical Jesus*

A study of the sources, problems, and methods in the various "quests" for Jesus of Nazareth. We will study each phase of the quest in the 19th and 20th centuries, from Reimarus to the Jesus Seminar. Students will assess historical-critical criteria and apply these criteria to the sources in a term paper in order to construct their own versions of a "life" of Jesus. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *28. Women and the Hebrew Bible*

Explores the portrayal of women in the Hebrew Bible, as well as the ways these images their roles and voices have been understood and developed in subsequent Jewish literature. Examines such figures as Eve, Sara, Rebecca, Leah, Rachel, Miriam, Zipporah, Job's wife, Ruth, and Naomi, as well as considering the function of gender imagery in the prophetic literature and the Song of Songs. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *30. New Testament*

Deals with the historical and religious background of the New Testament period and concentrates on the origin and purpose of the New Testament writings and the overall meaning of the individual books. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *32. Millennium and Apocalypse*

Focuses on the ancient Judeo-Christian literary genre "apocalypse," subsequent millennial movements in Western history, and interpretative models. Texts include the Jewish pseudopigraphic literature, the Dead Sea Scrolls, selected books from the Jewish and Christian Bibles and other Jewish and Christian-gnostic apocalypses. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *35. Science vs. the Bible: The Genesis Debates*

This course explores the continuing debate over the biblical stories of creation and the flood in relation to the sciences of human evolution, geology, and mythology. One focus will be on historical developments in America and England in the 17th-19th centuries. Also, we will consider the role of fundamentalist Christianity in the public school system today. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *41. Biblical Hebrew I*

Introduction to the vocabulary and grammatical forms of Biblical Hebrew. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (2 units)

### *42. Biblical Hebrew II*

Completion of the grammatical forms of Biblical Hebrew. *Prerequisite: Completion of SCTR 41.* (2 units)

### *43. Biblical Hebrew III*

Introduction to the reading of various genres of Biblical Hebrew literature and ancient Hebrew inscriptions. *Prerequisite: Completion of SCTR 41 and 42.* (2 units)

### *100. Biblical Poetry and Ancient Myth*

Comparative study of the poetry and myths of ancient Israel and the ancient world. Focuses on the Psalms, the Song of Songs, and the Book of Job. Examines a number of Mesopotamian, Canaanite, and Egyptian myths. Discusses the methodological problem of mythic interpretation. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *101. Reading the Bible Today*

Explores contemporary dilemmas related to the changing interpretation of the Bible in the postmodern, global context. Areas of investigation include the feminist/liberation interpretation, historical criticism, postcolonial interpretations, and emerging gender questions. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *102. Biblical Criticism: New Testament*

Explores the tension between historical-critical readings of scripture and the perspectives of communities of faith. Particular methods, namely redaction or editorial criticism, narrative criticism, rhetorical criticism, and feminist criticism will be applied to particular New Testament texts. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *103. Approaches to Luke/Acts*

Focuses on the Gospel according to Luke and the Acts of the Apostles as a unified document with special emphasis on its sources, message, and theology. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *104. Pauline Letters and Rhetoric*

Examines the letters attributed to Pauline authorship and develops an analysis of Pauline theology. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *105. Interpretation of the Johannine Writings*

Examines the Johannine literature in order to understand its impact on the development of Christianity. Attention given to the person of Jesus in the fourth Gospel and Christian conflicts of conscience in regard to the state. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *106. Person of Christ in the New Testament*

Deals with Jesus' understanding of himself and his mission as well as the New Testament interpretation given to them. Different Christologies of the New Testament studied in order to show the unity and diversity in their interpretation of Christ. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *107. Scripture and the Moral Life*

Investigates the role of Scripture in the moral life of Christians with attention to the experience of discipleship, how the early Christians adapted the example of Jesus, how Christians in different cultural contexts learn from Scripture. Considers liberation theology, social scientific approaches, feminist criticism, and the role of the imagination. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *108. The Impact of the Dead Sea Scrolls*

The Dead Sea Scrolls, over 800 manuscripts (250 B.C.E. to 68 C.E.) were discovered in 1947-1956, one of the greatest manuscript finds of the 20th century. This course will begin by exploring the manuscripts and archeological evidence of Qumran, then the impact of the scrolls on understanding Judaisms and Christianities, both ancient and modern. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *125. Quran Interpretation*

This course comprises a close reading of Islamic scripture and various forms of scriptural exegesis. Also the historical context surrounding Qur'anic revelations, diverse forms of Qur'anic interpretation in premodern and contemporary eras, including issues relating to traditionalism and modernity, women, human rights, and mystical experience. No previous coursework in Islam is required. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *126. Sufi Mysticism*

Examination of the mystical tradition in Islam. The course will include the discussion of personal piety as well as institutional manifestations of mysticism such as the tariqas or Sufi orders. Attention given to mystical dimensions of the Qur'an as well as the dialectic between Sufi masters and legal authorities. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *132. Apocalypse Now*

This course explores characteristic themes in apocalyptic literature, theories about the social origins of the apocalyptic movements of ancient Judaism and Christianity, and motifs and themes in the popular media. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *198. Practicum*

(1–5 units)

### *199. Directed Readings and Research*

For religious studies majors only. (1–5 units)

## AREA II: THEOLOGY, ETHICS, AND SPIRITUALITY (TESP)

*Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.*

### *3. Religious Reflection*

Designed especially for atheists, agnostics, and those disaffected from church or religion. Through readings, written essays, and discussion, students are encouraged to raise and reflect on whatever questions are of deepest importance to them. (4 units)

### *4. The Christian Tradition*

A theological examination of the Christian tradition covering such topics as: religious experience and the meaning of God; Jesus in the Gospels; the development and history of the Christian churches; the relevance of Christianity in the 21st century global world. (4 units)

### *5. Catholic Theology: Foundations*

An introduction to the fundamental theological issues of Catholicism, such as: the experience of God, relevation and faith, the historical foundations of the tradition, the mystery of Jesus, grace, sin and redemption, the Church, sacraments, and religious pluralism, etc. (4 units)

### *6. Catholic Theology: Spirituality*

Explores some of the varied expressions of Christian faith in the Catholic Church. Introduces the tools and methods of Catholic theology. Focuses on equipping the student to understand experience and the world from a faith perspective. Reading, reflection, and discussions encourage students to formulate genuine theological questions. (4 units)

### *12. Medieval and Renaissance Religion*

This course questions: (1) how does one objectively study religion, and (2) what does it mean to be religious in the world today? As a focal point for these questions, course concentrates on the experience, philosophical themes, and social history of religion in the West from the end of the Roman Empire until after the Protestant Reformation. (4 units)

### *31. The Christ: Mystery and Meaning*

An historical and theological examination of Jesus of Nazareth: the meaning of his life, ministry, death, and resurrection; the doctrine of Jesus as man and God and its application to contemporary experience; the meaning of Christ as savior in a global, multicultural world. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *32. Theology of the Sacraments*

Analysis of the work of Christ as the sacrament of God the Father, of the Church as the sacrament of Christ, and of baptism, confirmation, reconciliation, healing, the Eucharist, and orders as the principal sacramental actions of the Church. (Marriage is studied in a separate course.) Origins in the Scriptures. Traditional theological interpretations. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *35. Multiculturalism and Theology*

Examines articulations of multiculturalism's theoretical framework and investigates some of its basic concepts, e.g., contextuality, identity, marginality, etc. Examines how these concepts are worked out in different contextual theologies. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *38. Contemporary Catholic Theology*

A treatment of recent attempts within Catholic theology to interpret and articulate ancient faith traditions regarding the meaning of faith today. Contemporary assessments of classic theologies as well as a survey of contemporary Catholic approaches to the interpretation of Scripture and traditions. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *39. Catholic Theology: Christology*

An introduction to contemporary Catholic Christology approached as Christology "from below," initial consideration of some fundamental theological concepts and then Jesus Christ as a historical figure and object of faith. Course pivots around Jesus' proclamation of the "Kingdom of God" and considers his history through the resurrection. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *41. Christianity and World Religions*

Religious pluralism as understood primarily in Judeo-Christian tradition. Revelation, authority, truth, and intrareligious dialogue. Analysis of religious truth claims, Buddhist-Christian dialogue, and meditation East and West. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *42. Theology of C.S. Lewis*

A study of the religious writings of C.S. Lewis. Examines Lewis' approach to religious truth, and analyzes the major theological themes that are his concern. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *45. Christian Ethics*

Focus on the moral implications of the Christian commitment, formulation of the principles of a Christian ethic, and their application to areas of contemporary life (e.g., to wealth and poverty, violence and nonviolence, bioethics and interpersonal relations). Some sections require a SCCAP or Arrupe Center placement. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *46. Faith, Justice, and Poverty*

Examines biblical theologies of social responsibility, major theologians on poverty, and current appropriations of these traditions. Mandatory SCCAP or Arrupe Center placement. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *49. Christian Mysticism*

A study of the lives and writings of key figures in the mystical traditions of Christianity. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *51. Christian Spirituality*

A study of post-Vatican II spirituality with a focus on the place of spirituality within Christian belief and practice and its roots in the Hebrew and Christian Scriptures and tradition. Examines spirituality in contemporary life: forms of prayer, asceticism, mysticism, classic questions/issues. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *52. Zen Spirituality*

Explores the genealogy and spirituality of Zen Buddhism, which requires a brief study of Hinduism, Theravadan Buddhism, and Taoism. We enter the stream of Zen with selections from major figures in the tradition. Each class begins with a short zazen (sitting meditation), and you will be encouraged to practice outside of class. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *53. Religious Imagination*

Through reflection, written essays, and discussions of selected pieces of literature, films, and art, this course attempts to stimulate the imagination and clarify its relation to religion. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *54. Meditation*

Study and practice of meditation. Daily meditation required. No lectures. Class discussion, weekly brief essays. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *55. Spirituality and Literature*

Uses literature (mostly modern) to discover and analyze the way spiritual themes are expressed and appreciated in this medium. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *60. Hispanic Theology*

In this course students will study the popular expressions of faith of the Hispanic people, exploring their theological underpinnings. The course will include both classroom and field experience. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *62. Medical Ethics in Christian Perspective*

Introduction to the field of biomedical ethics, with special attention to the guidance and challenges that a Christian perspective provides. Examination of ethical principles and their application to current topics, with attention to how conflicting approaches can all claim to be "Christian." *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *65. U.S. Hispanic Theology*

This course will acquaint students with the historical development of Hispanic theology in the United States. Attention will be given to the works of representative U.S. Hispanic theologians and to the themes and concerns that these works address. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *75. Jewish Ethics*

This course explores ethical reasoning from a range of Jewish perspectives, drawing on the Bible, classical and contemporary rabbinic texts, secular Jewish thought, post-Holocaust reflections, modern Jewish philosophy, Zionist and post-Zionist critiques, feminist insights, and Jewish Renewal writings. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *82. Witches, Saints, and Heretics: Religious Outsiders*

This course surveys the experience of religious exclusion across the realms of magic, holiness, and heterodoxy. While anchored in the pre-modern Christian tradition, the course also explores more contemporary phenomena, persons, and movements. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *102. God and Human Suffering*

Examination of the biblical texts, interpretive issues, and theological perspectives associated with experiences of suffering and their relation to God and our world. Special attention given to reflection on these realities, to increasing self-awareness regarding these issues, and to the implications of these resources for reflection and practice. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *109. Hispanic Spirituality: Guadalupe*

One of the most popular Marian devotions for Hispanic people (of primarily Mexican descent) is that of Our Lady of Guadalupe. This course will study the history and tradition of Guadalupe, exploring its religious and spiritual significance in both the past and the present. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *112. Spirituality and Business*

What role, if any, do non-economic or spiritual factors play in business decision-making? Looks at various frameworks for answering this question and the way in which business executives, employees, and religious thinkers approach this issue. Through case studies, readings, and interviews, students explore how people apply spiritual concerns to business. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *114. Spirituality and Organizational Life*

Engages Judeo-Christian spiritual writings as they pertain to life within any organization and the inner life of a person striving to be productive while enjoying the challenges of creativity, accompanied by the indignities and injuries that typically occur in organizations. Attempts to bridge the gap between religious ideas and the practical world of work. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *115. Tradition and Interpretation*

An examination of the status of a "Christian tradition" in light of classical, modern and post-modern theories of interpretation, and in relation to the historical developments of religious pluralism and social fragmentation. Theorists studied include Aquinas, Newman, Heidegger, Gadamer, Tracy, and Derrida. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *116. Christ in Contemporary Thought*

Explores issues currently surrounding the central figure of Christian faith, including theories about the historical Jesus obtained from scriptural and historical studies, theological approaches to the "divinity" claim, and the implications of Christian faith for contemporary cultures and social problems. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *117. God in Contemporary Thought*

Explores the reality and meaning of God as absolute mystery, truth, and goodness in today's culture. Contemporary theological and philosophical approaches to the topic attempt to unlock the mystery of self, God, and the world. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *120. Christian Resistance to Evil*

Since September 11, 2001, rhetoric about the means of appropriate and effective resistance to evil has become a familiar part of ongoing public debate in the United States. In this course students will survey a variety of Christian contributions to this conversation, including biblical, historical, and contemporary traditions and figures of resistance. What do Christian voices have to say in contexts of violence, injustice, suffering? Are these voices credible today? What shape might a contemporary Christian spirituality of resistance take in a particular situation? Students will be encouraged to explore these questions in light of those concerns most pressing to them. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *121. Theology of the Church*

A theological study of the Christian community from its historical origins in Jesus and the Scripture to its nature, diverse forms, and relevance in the modern world. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *122. Spirituality, Ethics, and Sex*

Explores the question, "What is a couple?" through the lenses of gender, spirituality, and ethics. Investigates several of the forms of human pairing: heterosexual couples, marriage, same-sex bonding, friendships, celibate marriages (e.g., "spiritual marriages"). Emphasis on the interplay among various understandings of gender, relationship to the Divine, images of God, and the attitudes shaping the couples. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *123. Christian Experience of God*

Nature of religious experience. Emphasis on how the Christian community expresses or symbolizes its experience of God in creed, doctrine, and liturgy. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *124. Theology of Marriage*

An examination of human relationships, intimacy, sexuality, and marriage through the social sciences, philosophy, and theology; and exploration of human love in the unconditional commitment to spouse as the expression of divine love. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *125. Belief and Unbelief*

The question of religious belief has been a vital part of the world's cultures and civilizations. In the modern West, however, new and dramatic forms pose the question. Course studies why and how this is so through reading a variety of proponents of both believers and unbelievers, including Nietzsche, Camus, Freud, and Teilhard de Chardin. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *126. Spirituality and Aging*

Theologians, philosophers, and developmental theorists ponder how to reach old age with wisdom and grace; some see the search for an answer as the most significant task of our maturity. This course addresses this question for those considering their own future or the aging of loved ones, as well as for those working toward a career in gerontology, religion, or psychology. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *127. Black Theology in the United States*

A critical assessment of black theology of liberation as it has developed from the 1960s in the United States, including the demands of black women. Questions why a black theology, and it challenges individual religious and theological perspectives. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *128. Issues in Contemporary Catholicism*

Attempts to chart the complex process by which Catholicism both freed itself from its traditional fear of modernity and articulated a program for apostolic insertion into the modern world. Special emphasis placed on a comparative study of the ecclesiologies of Trent, Vatican I, and Vatican II. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *130. Liberation Theology*

Latin American, African, Asian, and feminist theologies of liberation. Assessment of the impact of these theologies on such issues as ecclesiology, method in theology, Christology, biblical interpretation, and spirituality, as well as the implications for North Americans. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *131. Feminist Theology*

Examination of central issues emerging in feminist theology. Exploration of biblical sources, women in the Christian tradition, sexuality, ethics, morality, and new directions for women in Christianity. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *137. Theology of Death*

An examination of the experience of death and the meaning of Christian hope in light of the death and Resurrection of Jesus; the meaning of the Christian symbols of judgment, heaven, hell, and the end of history. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *138. Contemporary Theology of Paul Tillich*

An examination of the philosophical and theological thought of one of the great 20th century theologians, with special emphasis on his theology of culture, and his effort to reinterpret the Christian message for contemporary people. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *139. Theology of the Human Person*

Is Christ alone necessary for salvation? In taking on this classic question, this course will establish a systematic framework for reading and assessing theology and map out the various trajectories of contemporary Catholic theology in an ecumenically minded and religiously pluralistic world. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *140. Bernard Lonergan*

Investigates the resources for the philosophy of religion in Bernard Lonergan's writings. Intended for students who enjoy serious philosophy. Emphasis placed on class participation and writing exercises. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *141. Spirituality of Modern Relationships*

This course focuses on intimacy, sexuality, and marriage with a theological context. Centered on questions involving ways of being in a relationship. Students will explore various positions and arrive at conclusions based on their own work and classroom discussions. They will critique the role of romantic love in Western society, and its influence on modern relationships. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *143. Theology and Ethics of Thomas Aquinas*

A study of the life, thought, and ethics of Aquinas. Basic topics to be discussed include the existence of God, human nature, and human participation in society. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *144. Theology and the Law*

A team-taught course meeting two evenings a week (Monday and Wednesday) in which two professors, one in law and one in theology, discuss a number of contemporary legal/ethical issues from both perspectives. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *147. Religious Autobiography*

Selected Christian autobiographies from St. Paul to Dag Hammarskjöld. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *148. Literature and Theology*

Discussion of the religious aspects of various works of significant world literature. A brief well-written essay on the material for discussion required each class session. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *149. Faith and the Holocaust*

What part did religion play in the Holocaust? Where was the God of love and salvation in the midst of absolute evil? Is traditional faith possible in the face of Auschwitz? This course explores a range of theological dilemmas, cries, and possibilities posed by modern Europe's slaughter of millions of Jews and other "undesirables." *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *151. Issues in Theology and Science*

Explores how theology and science arrive at views of the world and the basis of conversation between theology and science. Theoretical applications drawn by exploring Galileo, Darwin, evolution, cosmological theory, and ecological theology. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *153. Catholic Themes in Literature*

Using novels and other literature either written by Catholics or using Catholic themes, through extensive reading, the writing of reflective essays, and class discussion, students investigate the uniquely Catholic vision. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *154. Theology in the Daily News*

An examination of religious and theological dimensions of contemporary culture. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *155. Catholic Social Teaching*

Explores the evolution of Christian social thought as it has developed and expanded throughout the Church's history. Special emphasis on the Church's relationship to the world since Vatican II. Critical analysis of recent pastoral letters. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *157. Ethics in the Health Professions*

Introduction to the major issues in biomedical ethics. Basic principles of biomedical ethics, genetic interventions and reproductive technologies, euthanasia, professional responsibilities, confidentiality, and public policy issues regarding the system of delivery of health care. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *159. Ethics and Warfare*

Examines the history of moral deliberation about war in Western religious traditions, as well as contemporary philosophical analyses of the diverse moral principles that those traditions have bequeathed to us. The goal is an appreciation for the application of moral philosophical reasoning to contemporary wars. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *160. American Religious Ethics*

A distinctive American religious approach has been described as experiential, pragmatic, affective, and socially transformative. Course examines this issue from the Puritans to today through major texts, emphasizing the moral dimension of American religion. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *161. Environmental Ethics*

An introduction to the exciting field of environmental ethics: the theological and philosophical principles underlying contemporary ecological attitudes; issues such as the rights of nonhuman animals, mass extinction of species, corporate responsibility, human population control, and the moral dimensions of global ecological dilemmas; development of an integrated theological understanding of human life on earth. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *162. Feminist Ethics*

Provides students with an opportunity to consider a range of social practices and public policies from feminist ethical and religious perspectives. In addition to developing analytical tools by which to assess these contemporary practices and policies, we will explore visions of feminist futurists and try our own hands at envisioning a desirable and deeply ethical society. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *163. Christianity and Politics*

A historical investigation into changing patterns of relationship between Christianity and the political order. Emphasis on the foundational events of the biblical era, the early Christian era, and on Christianity's experience of secular modernity in the United States. Readings drawn from both documentary sources and contemporary discussions. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *166. Celtic Spirituality and Ethics*

Charts the impact of the Celtic tradition in both spirituality and ethics, which emphasizes a communal, this-worldly, ecologically-centered approach that brings together pre-Christian and Christian elements into a distinctive way of life. Will investigate storytelling, music, friendship, monastic life, penance, and pilgrimage, drawing on original texts and local sites in Durham, northern England, and Scotland. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *169. Jesuit Perspectives*

Overview of the Jesuits, their origin and history, their view of education, their ethical and spiritual world view. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *170. Homosexuality and Catholic Theology*

Examines Church teaching and contemporary discourse about homosexuality. Scripture, natural law, and recent teaching by the Roman magisterium are analyzed. The meaning of homosexuality, the emergence of the gay liberation movement, and theological perspectives are considered. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *173. Religion, Science, and the Environment*

Recognizing that religion and earth's ecology are inextricably linked, this course reexamines attitudes toward the natural world and the relationship between scientific and religious perspectives on nature. Topics include historical roots of the eco-crisis, cosmology, and eco-theology. Arrupe Center project may be required. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *180. Basic Buddhist Concepts*

A critical study of some basic concepts in Buddhism: safe (saddha), suffering (dukkha), karma, karma and rebirth, Nirvana, The Way (magga), and the doctrine of no-self (anatta), which resist an easy fit into a coherent whole. This resistance and conflicting interpretations by different traditions will be used as occasions for thinking further on them. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *198. Practicum*

(1–5 units)

### *199. Directed Readings and Research*

For religious studies majors only. (1–5 units)

## AREA III: RELIGION AND SOCIETY (RSOC)

*Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.*

### *7. South Asian Religious Traditions*

An introduction to the major religious traditions of India and neighbors: Hinduism, Buddhism, Jainism, Sikhism, and Islam; historical development of each faith, what is distinctive in each tradition; and particular attention to the ways in which these traditions have influenced each other. (4 units)

### *9. Ways of Understanding Religions*

Introduces the categories by which religion is formally studied. Explores distinct perspectives or ways of thinking about religion (e.g., psychological, phenomenological, anthropological, theological, and sociological); also considers a variety of religious data (e.g., symbols, myths, rituals, theologies, and modern communities). (4 units)

### *10. Asian Religious Traditions*

Addressing Hinduism, Buddhism, Confucianism, and Japanese Zen, focuses on four different religious issues and how each Asian tradition has defined the nature of the divine, human effort versus faith and devotion, social ethics versus inner mystical experience, and the impact of religion on culture and (vice versa). (4 units)

### *11. World Religions*

An exploration of the ways in which human societies have experienced the religious dimensions of existence, attention to issues of suffering, personal salvation, and sustaining of communal identity. Includes Hinduism, Buddhism, and Zoroastrianism, as well as the Abrahamic traditions. (4 units)

### *13. Religion and Modernity*

An introduction to the study of religion; focus on the interaction between religious traditions (primarily Christianity) and various facets of the modern West. Some sections of this course are reserved for students in the Freshman Residential Community Program. (4 units)

### *14. Religion Through Experience and Writing*

Connecting with SCU's Jesuit identity, the course will immerse students in the culture and history of El Salvador, where religion and spirituality form an integral part of the people's everyday experience. Linked to an English course to be named, which will provide a holistic approach to both religion and written communication, as well as to explore implications of both fields for their own lives at the University. (4 units)

### *50. Longings for Immortality*

From close readings of core texts in the Western tradition, ranging from Gilgamesh to Dante's Divine Comedy, and critical analyses of recent films, such as "Contact" and "What Dreams May Come," this course will examine relation between afterlife beliefs and codes of conduct for life in this world. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *51. Religion in America*

Traces the development, character, and impact of religion in America from the precolonial era to the present. Course readings and discussions will center on the relationship between religion and the development of American culture. Includes Native American traditions; slavery and religion; the rise of revivalism; gender; religion and war; immigration; and modern pluralism, etc. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *61. Religion of Oral Peoples*

Examines the religious cultures of four oral (nonwriting) peoples: Native North Americans, Native South Americans, Native Africans, and Native Australians. Studies importance of representative myths, rituals, and systems. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *63. Psychology of Religion*

Analyses of religious ideas and practices from psychological perspectives, psychological interpretations of the lives of religious thinkers; analyses of religion and psychology in contemporary film. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *65. Early Christianity*

A selective survey of the history of the Christian church from its beginnings to the fifth century, a time of massive transformation. Topics include authority and discipline in the church, dissent and orthodoxy, patterns of religious life, and the church's interaction with the political and cultural life of the Roman Empire. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *66. Medieval Christianity*

The Christian tradition after Augustine and before Luther. Topics include the split between Byzantine East and Latin West, reform movements, structures of authority, modes of dissent, relations with the political order, and forms of piety and religious life. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *69. Exploring Jewish Traditions*

Offers an historical, cross-cultural, and thematic exploration of Jews and Judaism. Considers Jewish culture and societies from ancient Jerusalem to modern San Jose. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *70. Women in the Biblical Traditions*

An examination of attitudes toward women and roles of women in Christianity and Judaism; perspectives on gender in religion, family, and social structure; the contemporary feminist challenge to Judaism and Christianity; debates over sexuality and women's ordination. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *71. Women in Contemporary Middle Eastern Muslim Societies*

Explores not only the Islamic perspective on women but also Muslim women's perspective on Islam. Concerns the realities of Muslim women who, contrary to their image as oppressed, are increasingly affirming Islamic institutions and asserting their Muslim identity. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *72. U.S. Catholicism*

A historical examination of the Catholic experience in the United States. Includes the encounter with U.S. pluralism, the impact of immigration, relations with Rome, church-state relations, the development of new structures in Catholic life, and the direction of U.S. Catholicism after Vatican II. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *76. Representing the Holocaust*

Interdisciplinary in design, the course explores how various forms of representation (personal narratives, fiction, theology, ethics, film, music, art, and liturgy) create different meanings about the Holocaust. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *77. Jews and Christians*

Explores the turbulent and troubled relationship between Christianity and Judaism from New Testament times to today. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *80. The Protestant Tradition*

Origins and development of Protestant thought and Protestant ecclesiastical institutions. Special attention to U.S. Protestant Christianity and its impact on U.S. political and social life. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *81. Islam*

An introduction to the Islamic tradition focusing on the dialectic between normative theology and popular devotion. Readings include the Quran, Sufi literature, and devotional poetry. Discussion of Quranic concerns in the Sunni and Shia traditions, ecstatic mysticism, Islamic law, and contemporary issues relating to the status of women, Westernization, and modernity. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *82. Shia Islam*

An introduction both to Islam in general and to the Shia tradition within Islam. History and development of Shia doctrine, with particular attention to forms of Shia ritual in India. No previous coursework in Islam required. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *83. Faith and Politics in the Middle East*

Considers the relationship between religion and politics in the Middle East, historically as well as in the modern world. Focuses on the major religious traditions of Islam, Christianity, and Judaism. Topics include nationalism, revolution, the papacy in the Middle East, and religious tolerance. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *85. Hinduism*

Exploration of the historical development, theologies, symbols, rituals, scriptures, social institutions, and 20th-century politics of Hinduism, primarily in India. Main focus on the interaction of religion and culture. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *86. Buddhism*

Exploration of the whole Buddhist tradition, including Indian origins, Theravada traditions of Southeast Asia, Mahayana traditions of Central and East Asia and Buddhism in the West. Emphasis on cultural impact of religion, Buddhist philosophy and practice, and modernizing tradition. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *88. Chinese Religions*

Focuses on the historical development of Chinese religions—Confucianism, Daoism, Buddhism, and their philosophies, as well as the interface between folk religion, society, and political institutions in traditional and modern China. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *89. Japanese Religions*

Focuses on the historical development, doctrines, institutions, aesthetics, and literature of the religious traditions in Japan-Shinto, Buddhism, folk, and new religions. Special attention to Zen Buddhism and modern Shinto. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *91. Native American Religions*

Exploration of the religious belief systems, rituals, and institutions of the indigenous peoples of North America by geographic region and types of religious systems. Special focus on contemporary community issues of religious identity, stereotyping, Pan-Indian movements, and social change. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *99. Sociology of Religion*

Using early and American Christianity, this class examines how various social forces shape the religious beliefs and practices of people of faith. Draws on a number of sociological perspectives, looking both at their historical and philosophical underpinnings and at what they can tell us about faith in the modern world. *Prerequisite: Introductory level course (SCTR 1-19, TESP 1-19, or RSOC 1-19).* (4 units)

### *103. Mysticism and Psychology*

Explores religion as a social and cultural phenomenon from the perspective of psychology. Focuses on the psychological interpretation of mysticism and spirituality in historical and contemporary context. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *108. Buddhist Spiritual Practices Today*

Using sacred texts as well as modern sources, investigates a range of Buddhist practices, from monasticism to modern psychotherapy. Starts with the basic tenets and cosmology, then ethical conduct, meditation, ritual, how Buddhism has been shaped by the cultural milieus of East and Southeast Asia, and the relationship between tradition and modern practice. Some fieldwork. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *110. Film and Religion*

Explores film in relation to religion. Examines theological, mythological, and moral themes; changing portrayals of religious leaders and groups; and the mutual influence of religious belief and film-making in the 20th century. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *111. Inventing Religion in America*

Explores the spiritual creativity that stands at the center of the American experience and asks what characteristics facilitated such religious diversity. Looks at beliefs and practices, and also historical contexts. Includes Mormons, Christian Science, Jehovah's Witnesses, the Nation of Islam, Scientology, and Heaven's Gate, etc. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *120. The Bhagavad Gita*

This course will be a reading of the Bhagavad Gita to gain appreciation of it not simply as a perennial spiritual and literary classic, but as a critical tool in the construction of Hindu self-identity. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *141. Religion and Ecology: Contemporary Voices*

An examination of religious attitudes toward nature in contemporary North America that will explore such emerging perspectives as deep ecology, eco-feminism, earth-based religion, spiritually grounded environmental activism, and contemporary cosmology. Will consider how religious outlooks affect human beings' lived relationship with the greater natural world. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *144. Gender, Body, and Christianity*

Focuses on attitudes and perceptions about the body and gender roles in the history of Christian thought. Topics include: ritual nakedness in early Christianity; the appropriation of sexual stereotypes from Greco-Roman culture; sexual practice in Christian communities; gender metaphors for the Divine; changing gender roles in Church and Society. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *150. Gnosticism and the Gnostic Imagination*

Explores Gnosticism, a form of spiritual insight involving esoteric knowledge of the soul's origin and the nature of the world, in which salvation is claimed to be linked to deliverance from the powers that created the cosmos. Readings will include Gnostic works from medieval Christian and Islamic authors, as well as a sampling of Gnostic motifs in modern literature. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *153. Zen in Time and Thought*

The course looks at the historical context of the Buddhist concepts of suffering (dukkha), karma, rebirth, Nirvana, and the doctrine of no-self (anatta), and how these concepts developed in Chinese Mahayana Buddhism, specifically, Zen, and the history of the Zen interpretation of these concepts in Asia and in the West. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *155. Daoism: Ancient and Modern*

Daoism is considered the oldest form of religious thought and practice in China, yet it is alive and evolving today in forms consistent with its past. This course will examine core ideas and practices, both mystical and ritual, and look at how an ancient tradition modernizes. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *160. U.S. Catholics in American Culture*

Examines Roman Catholicism in North America from Colonial times to the present, the mutual influence of Roman Catholicism and American society on the formation of various ecclesiologies, i.e., ways of living in tension between two allegiances and two life-worlds: Catholic and American. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *164. Religion, Race, and Ethnicity in America*

Religion and race constitute two of the central threads of the American experience. This course traces their complex relationship by examining the interaction of religion with race and ethnicity in a variety of social and historical contexts. Particular attention paid to the shifting meanings of racial and ethnic categories, and how other categories of analysis, especially class and gender, both illumine and complicate the relationship of religion with race and ethnicity. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *168. Gender and Judaism*

Explores ideas and images of Jewish "femininity," "masculinity," and "queerness" generated by Jewish and non-Jewish cultures throughout history to the present. Considers the political/economic, religious, and other cultural dimensions of these images and ideas. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *173. Modern Jews and Judaism*

Uses a variety of sources to explore some of the ideas and experiences that have shaped Jews and Judaism in the modern period: enlightenment and emancipation, Hasidism and secularism, Zionism and socialism, immigration and assimilation, anti-Semitism and the Holocaust, denominationalism, feminism, Jewish Renewal, and the future. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *176. Religion in Making of American Identities*

Provides historical and in-depth coverage of selected themes in the modern U.S. religious landscape, surveying themes and institutions in U.S. religion past and present and tracing the development of U.S. religion from the early 17th century to the post-World War II era. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *179. Magic, Science, and Religion*

An introduction to the primary texts in the study of religion as a social and cultural phenomenon—Durkheim, Weber, Eliade, etc. Attempts to demonstrate the historicity of the ways in which "religion" has been identified, compared, and envisioned as well as introduce the issues that affect how intellectuals, pundits, and policy makers talk about religion. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *180. Religion in the Theories of Freud and Jung*

Examines religion in the theories of Sigmund Freud and Carl Jung. Focuses on the interpretation of religious belief and practice from the perspective of depth psychology, on theological responses to the thought of Freud and Jung, and on the impact of psychoanalysis on contemporary culture. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* Also listed as PSYC 159. (5 units)

### *181. England the Holy Land: Issues in Orientalism*

This course explores the relation between England and the Holy Land in terms of religious imagination, the translating of the English Bible, and archaeological pioneers to the Middle East. (For England-site visits will include the British Museum and various ruins in the Durham region.) Grading is based on course papers and brief in-class presentations. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *182. Law and Justice in the Middle East*

The legal system and social ethics of ancient Israel with special emphasis on the concern for social justice in the prophetic literature of the Hebrew Bible. Explores early rabbinic law. Emphasis on social justice themes in Third World liberation theology. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *184. Race and Religion in the United States*

Course begins with an examination of the living situation of people of African descent in the United States as well as an analysis of their social context—economic, educational, and political aspects. Considerations are then given to the effects the Christian message has had in this situation. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *185. Sex and Gender in Chinese Religions*

The participation of women in religion (Hinduism, Islam, and East Asia) as shaped by notions of female purity and pollution. The role of such beliefs within religious communities. Marriage, sexual segregation, menstruation, motherhood, monasticism, and shamanism. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *187. Ethical Issues in Asian Culture*

Grapples with the variety of ethical norms rooted in different religious traditions and cultures; questions how religious cultures shape ethical concerns and perspectives; and discusses the problems of talking about (and deciding) ethical issues cross culturally. Readings address war, abortion, wealth, and human rights in Hinduism, Buddhism, and Confucianism. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *190. Islam: Reformation and Modernity*

Comparative study of contemporary Islam. Beginning with the study of origins and basic doctrines of Islam, course examines its development in the modern world. Focuses on Islam's interaction with different cultures, emphasizing political implications of rise of revivalism. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *192. Mysticism*

Examines the nature and development of spiritual consciousness using classic texts, film, and "practical" exercises. Explores the paradoxical nature of mysticism, how and why it challenges the "normal" categories that perceive and interpret reality. Also looks at mysticism's principal types and multidisciplinary structure (philosophical, theological, psychological). *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *196. State and Church in Latin America*

Considers the role of Christianity in Latin America: the conquest and pacification, church-state conflicts, contrast among present-day nations, and the effects of traditional and liberation theologies. *Prerequisite: Intermediate level course (SCTR 20-99, TESP 20-99, or RSOC 20-99).* (5 units)

### *198. Practicum*

(1–5 units)

### *199. Directed Readings and Research*

For religious studies majors only. (1–5 units)

# 4

# Leavey School of Business

## LEAVEY SCHOOL OF BUSINESS

**http://business.scu.edu**

The Leavey School of Business offers a professional business education within the larger context of academic excellence in the Jesuit educational tradition. As such, it provides undergraduates with both the technical skills necessary for success in business and the ethical, global, and humanistic perspectives that are hallmarks of a liberal education. The program strives for a mix of theory and practice and emphasizes the development of leadership skills.

The Leavey School confers the degree of Bachelor of Science in Commerce (BSC) with majors in Accounting, Economics, Finance, Management, Marketing, and Operations and Management Information Systems (OMIS). A general business minor is also available to non-business students.

## REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN COMMERCE

To qualify for the degree of Bachelor of Science in Commerce students must complete a minimum of 175 quarter units of credit, of which at least 60 must be in upper-division courses, and satisfy the requirements of the University Core Curriculum, the Leavey School of Business curriculum, and the departmental major. The University Core requirements and the Leavey School requirements follow. Consult individual department sections for major requirements in each department.

## UNIVERSITY CORE

### English Composition and Writing

Three courses: (a) two courses in composition and rhetoric, normally ENGL 1 and 2; and (b) one course emphasizing writing from the list of approved courses offered by the English Department.

### Western Culture

Two courses in one of the following sequences:

- ARTH 11, 12, and 13
- ENGL 11, 12, and 13
- HIST 11, 12, and 13
- HNRS 11, 12, and 13
  (open only to students admitted to the University Honors Program)
- PERF 11, 12, and 13
- PHIL 11, 12, and 13

The two Western Culture courses should normally be taken in sequence.

### Second Language

Native English speaking students can fulfill this requirement in one of three ways: (a) successful completion of the second course of the first-year, college-level sequence in a classical or modern foreign language; (b) demonstration of an equivalent level of proficiency by passing a language proficiency examination supervised by the departments of Classics or Modern Languages and Literatures; or (c) by obtaining a minimum score of 4 on the Advanced Placement Examination in a classical or modern foreign language. Students for whom English is not their native language may satisfy this requirement by petitioning the chair of the Department of Modern Languages and Literatures and the chair of the University Core Curriculum Committee. The petition must include professionally recognized documentation of proficiency in a language other than English.

### Social Sciences

One course: ECON 11 (Markets and Prices).

### Mathematics and Natural Sciences

- Two mathematics courses: MATH 30 and 31 (Calculus for Business I and II) or MATH 11 and 12 (Calculus and Analytic Geometry I and II).
- One laboratory course in a natural science.

### Ethics

One course: PHIL 6 (Ethical Issues in Business) or MGMT 6 (Business Ethics).

### World Cultures/Societies

Two courses: BUSN 80 (Introduction to International Business) and an additional course from the approved list of area studies/regional courses.

### Religious Studies

Three courses in religious studies or from the list of other approved courses, one each at the introductory, intermediate, and advanced levels, taken in sequence. The introductory-level course is normally taken during the freshman year; the advanced-level course must be taken after completing 88 quarter units.

### Technology

This requirement is fulfilled by the combination of Data Analysis and Information Systems requirements in the School of Business.

### United States

One course selected from the approved list of United States courses.

## BUSINESS CURRICULUM: LOWER DIVISION

### Introduction to Business

One course: BUSN 70 (Contemporary American Business) normally completed during the freshman year.

### Leadership Competency

Five units spread over four years beginning with a one-unit module, BUSN 71 (Foundations of Leadership), taken in the first year. BUSN 72 (Business Leadership Skills) is a two-unit class which is to be completed by the end of the sophomore year. BUSN 173 (The Leadership Experience) is a two-unit seminar which can be completed in either the junior or senior year.

### Economics

Three courses:

- ECON 11 (Markets and Prices)
- ECON 12 (Firms and Industries)
- ECON 13 (Macroeconomics)

### Accounting

Two courses: ACTG 11 and 12 (Information for Business Decisions I and II).

### Data Analysis

Two courses: BUSN 40 and 41 (Statistics and Data Analysis I and II).
A working knowledge of a spreadsheet program is a prerequisite for these courses.

### Information Systems

One course selected from the following:

- COEN 6, 20, 44
- MATH 10, 164
- OMIS 30, 31, 34
- ACTG 135

The student's preparation and interests will determine the actual course selected. Students with limited computing experience should enroll in OMIS 34. More advanced students may choose one of the other courses listed.

## BUSINESS CURRICULUM: UPPER DIVISION

### Common Core of Knowledge

Four courses:

- FNCE 121 (Financial Management)
- MGMT 160 (Organization and Management)
- MKTG 181 (Principles of Marketing)
- OMIS 108 (Production Management)

### Environment of Business

One course selected from among the following:

- ECON 101 (Resources, Food, and the Environment)
- ECON 120 (Economics of the Public Sector)
- ECON 124 (Industrial Organization)
- ECON 126 (Economics and Law)
- ECON 136 (20th-Century Economic History)
- ENVS 120 (Introduction to Environmental Law and Regulation in the United States)
- HIST 183 (American Capitalism)
- MGMT 169 (Business and Public Policy)
- SOCI 149 (Business, Technology, and Society)

*Note: Some, but not all, of these courses satisfy the United States requirement in the University Core Curriculum.*

### Capstone Course

BUSN 162 (Business Capstone) must be taken during the senior year and completed with a grade of "C" or better.

## MINORS

### The General Business Minor

The Leavey School of Business also offers a minor in general business open to any non-business student. Requirements for the minor include:

- MATH 30 and 31 (or 11 and 12)
- One course in statistics: BUSN 40, MATH 8, PSYC 40, or AMTH 108
- BUSN 70
- BUSN 80 (or ECON 180)
- ECON 11, 12, and 13
- ACTG 11 and 12
- FNCE 121
- MGMT 160
- MKTG 181

### The MIS Minor

The Department of Operations and Management Information Systems offers a minor in Management Information Systems, open to all students. See the section on Operations and Management Information Systems for further information.

### Interdisciplinary Minors

The Leavey School also offers two interdisciplinary minors that may be of special interest to business students: the International Business minor and the Retail Studies minor. Both of these minors are also open to non-business students. See the Interdisciplinary Minors and Other Programs of Study section of this Bulletin for further information.

## SPECIAL PROGRAMS

### Leavey Scholars Program

The Leavey Scholars Program offers special opportunities for business students who have established a record of excellence in their Santa Clara studies. These academic high achievers are invited to enroll in special "honors" style sections of various business courses. The sections are intended to be especially rigorous and academically challenging and are taught by our very best faculty. Successful completion of the program warrants the designation "Leavey Scholar" on the student's transcript.

### The ACE Program

The ACE (Accelerated Cooperative Education) program offers a unique, challenging, and rewarding experience to business students admitted with distinction to the University. Participants receive a program of workshops designed to build, strengthen, and enhance their leadership skills, a paid summer internship with one of the ACE Business Partner companies, fast-track admission to the Santa Clara MBA program, and a $2,000 scholarship.

## BUSINESS ADMINISTRATION COURSES

***40, 41. Statistics and Data Analysis I and II***

Two-course introduction to statistical theory and data analysis for business and economics. Topics include how to describe large sets of numbers graphically and mathematically; how to use probability to evaluate uncertainty and risk; how to formulate and test hypotheses about population characteristics; how to describe the relationship between groups using simple and multiple regression; and how to use these methods to evaluate empirical claims made in business, by the media, and by researchers. Emphasis is on the analysis of real-world data using familiar software. Lab fee required. *Prerequisites: Math 12 or Math 31 and OMIS 17 or the equivalent.* (4 units)

***70. Contemporary American Business***

An introduction to the nature, forms, and objectives of the contemporary American business firm and its relation to the environment in which it operates. Business majors must enroll concurrently in the 1-unit module, Business Administration 71, Foundations of Leadership. (4 units)

***71. Foundations of Leadership***

Presents various theories, concepts, and models of leadership through a series of speakers, directed readings, and reflective writing assignments. (1 unit)

***72. Business Leadership Skills***

Designed to introduce students to various theoretical frameworks of leadership, while exploring how to develop leadership skills. Course integrates group discussion, selected readings, experiential learning, and reflective engagement experiences. (2 units)

***80. Introduction to International Business***

The basic conceptual vocabulary and theories of international trade and of foreign direct investment. Serves as a prerequisite to advanced courses in international business offered by several business disciplines. *Prerequisite: BUSN 70.* (4 units)

### *143. Entrepreneurship*

Introduction to entrepreneurship behavior focusing on developing, evaluating, and implementing ideas for new adventures. Lab fee required. (5 units)

### *162. Business Capstone*

The integration of knowledge from functional business courses with issues of business ethics and demographic diversity in the workplace, all in a global perspective. May be taught in a national policy framework, a corporate strategy framework, or as a quarter-long computer simulation game. Each framework includes a statistical data analysis component and a communication component. *Prerequisite: Senior standing.* (5 units)

### *173. Leadership Experience*

A seminar for students reflecting on their experience as a leader. Seminar includes selected readings, reflective engagement activity, personal leadership assessment, and writing assignments. (2 units)

### *198. Internship/Practicum*

Opportunity for upper-division students—typically involved with school-wide or interdisciplinary programs, projects, or initiatives—to work and study in or with profit and nonprofit organization. Generally includes selected readings, a reflective engagement activity, and a written report. Requires approval of the Associate Dean or Dean. May be included as fulfilling a requirement for a major only with permission of that department chair. (1–5 units)

## DEPARTMENT OF ACCOUNTING

*Professor:* Paul L. Locatelli, S.J.
*Associate Professors:* Michael Calagari, Suzanne M. Luttman, Jane A. Ou *(Chair)*, James F. Sepe, Neal L. Ushman
*Assistant Professors:* Michael J. Eames, Yongtae Kim, Susan Parker
*Ernst & Young Faculty Fellow:* Susan Parker
*Lecturers:* Wendy Donohoe, William O'Brien, Chris Paisley, Steven Wade

Santa Clara University declares its purpose to be the education of the human person within the Catholic and Jesuit tradition. Within the framework of this mission, the Department of Accounting aspires to develop the knowledge, skills, values, and attitudes that graduates need to succeed as competent, ethical professionals in the practice of accounting and as decision makers in business, government, and not-for-profit organizations.

### REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in accounting must complete the following: ACTG 20, 130, 131, 132, 135, 136, 138, and one upper-division accounting elective: ACTG 150, 151, or 152.

## LOWER-DIVISION COURSES

### *5. Personal Financial Planning*

Overview of the tools and information necessary for personal business decision making. Includes analysis of financial services, credit and borrowing, taxes, compenstation planning, consumer purchases, housing decisions, the time value of money, savings, and investments. **Note**: Does not satisfy the accounting elective for accounting majors. (4 units)

### *11. Information for Business Decisions I*

Overview of the role of financial information in economic decision making. Includes topics such as the dissemination of accounting information and its impact on capital markets, and the analysis of corporate annual reports. Coverage of financial statements and their use in determining profitability and the financial condition of a business entity. **Note**: This course is offered in Fall and Winter Quarters only. *Prerequisite: Sophomore standing and BUSN 70.* (4 units)

### *12. Information for Business Decisions II*

Introduction to the role of accounting information in the decision making of business managers. The objective is to investigate the use of business data in typical managerial functions such as planning, control, and making operational decisions. **Note**: This course is offered only in Winter and Spring Quarters. *Prerequisite: ACTG 11.* (4 units)

### *20. Reporting Financial Transactions*

Insight into the mechanics behind the preparation of financial statements. Focus is on the accounting model, accrual versus cash accounting, and the accounting process. **Note**: This course is offered only in Fall Quarter and is a prerequisite for ACTG 130 in Winter Quarter. *Prerequisite: ACTG 11 and ACTG 12.* (2 units)

## UPPER-DIVISION COURSES

### *130. Intermediate Financial Accounting I*

An in-depth study of the concepts underlying external financial reporting, along with expanded coverage of the basic financial statements. Detailed analysis of the measurement and reporting of current assets, operational assets, and investments, to include the treatment of related revenues and expenses. Significant attention is given to income statement presentation and revenue recognition. **Note**: This course is offered only once a year. *Prerequisite: ACTG 11, ACTG 12, and ACTG 20.* (5 units)

### *131. Intermediate Financial Accounting II*

Intensive analysis of generally accepted accounting principles as applied to accounting for liabilities, stockholders' equity, and the statement of cash flows. Accounting for income taxes, pension, leases, and the reporting of corporate earnings per share. **Note**: This course is offered only once a year. *Prerequisite: ACTG 130.* (5 units)

### *132. Advanced Accounting*

The focus is on accounting for business combinations and the consolidation of parent and subsidiary companies' financial statements. Covers a broad spectrum of financial reporting issues in the context of consolidated financial statements. Will also discuss issues of partnership accounting from organization to liquidation. **Note**: This course is offered only once a year. *Prerequisite: ACTG 131.* (5 units)

### *135. Accounting Information Systems and Business Risk Assessment*

Introduction to auditing and the accounting information systems that provide managers with useful and relevant information. Discussion of concepts underlying analysis and design of systems. Focus is on appropriate and cost-effective internal controls in computerized systems and the effects of computerized systems on traditional auditing techniques. Auditors' professional and ethical responsibilities will also be discussed. **Note**: This course is offered only once a year. *Prerequisite: ACTG 131.* (5 units)

### *136. Cost Management and Strategy*

Analysis of cost accounting with a strategic emphasis. Selected topics include process costing, activity-based costing, variance analysis, joint cost allocations, and the Theory of Constraints. **Note**: This course is offered only once a year. *Prerequisite: ACTG 12.* (5 units)

### *138. Tax Planning and Business Decisions*

A basic introduction to the tax treatment of transactions and events affecting both individuals and businesses. Includes issues of importance for successful tax planning. Addresses current policy debates and legislative proposals. Assumes no prior knowledge of the tax law. **Note**: This course is offered only once a year. *Prerequisite: ACTG 12.* (5 units)

### *150. Forensic Accounting*

Forensic accounting deals with the application of accounting methods to legal problems, and comprises investigative accounting and litigation support activities. Investigative accounting (usually referred to as fraud accounting) refers to the role of the accountant in determining the existence and extent of asset misappropriation and/or financial statement fraud. Litigation support activities include those professional services provided by accountants to attorneys in support of civil or criminal litigation. In addition to examining both aspects of forensic accounting, the legal system and the role of the forensic accountant as an expert witness will be discussed. **Note**: This course is an elective and is offered only once a year. *Prerequisite: ACTG 131.* (5 units)

### *151. Financial Statement Analysis*

This course provides a framework for using financial data in a variety of business analysis and valuation contexts. It explores how decision makers can use financial statements to evaluate the effectiveness of firm strategies, assess risk, forecast earnings and cash flows, and value companies. **Note**: This course is an elective and is offered only once a year. *Prerequisite ACTG 11, ACTG 12, and FNCE 121.* (5 units)

### *152. International Accounting and Financial Reporting*

Understanding similarities and differences in financial reporting practices globally is vital for all organizations involved in international business. The course takes a user perspective to international financial reporting. It examines economic and social factors that affect financial reporting practices, classifies global patterns in financial reporting, and studies the effect of the diversity in financial reporting on corporate investment and financing decisions. Technical issues covered include accounting for foreign currency transactions, accounting for the effects of inflation, international transfer pricing, and international financial statement analysis. **Note**: This course is an elective and is offered only once a year. *Prerequisites: ACTG 11, ACTG 12, BUSN 80, and FNCE 121.* (5 units)

### *161. Junior Contemporary Business Seminar Series I*

A series of seminars that cover topics pertinent to those pursuing a professional accounting career. Students are required to (1) attend sessions with the course instructor, (2) attend seminars sponsored by the Accounting Department, and (3) choose additional seminars from a list of recommended seminars and presentations offered throughout the University. This course requires one or more papers that address issues raised in the seminars. **Note**: This course is offered only in Fall Quarter. *Prerequisite: ACTG 11 and 12. Declared junior accounting major or considering accounting as a major.* (2 units)

### *162. Junior Contemporary Business Seminar Series II*

A series of seminars that covers topics pertinent to those pursuing a professional accounting career. Students are required to (1) attend sessions with the course instructor, (2) attend seminars sponsored by the Accounting Department, and (3) choose additional seminars form a list of recommended seminars and presentations offered throughout the University. The course requires one or more papers that address issues raised in the seminars. **Note**: This course is offered only in Winter Quarter. *Prerequisite: ACTG 11 and 12. Declared junior accounting major or considering accounting as a major.* (2 units)

### *171. Senior Contemporary Business Seminar Series I*

A series of seminars that cover topics pertinent to those pursuing a professional accounting career. Students are required to (1) attend sessions with the course instructor, (2) attend seminars sponsored by the Accounting Department, and (3) choose additional seminars from a list of recommended seminars and presentations offered throughout the University. The course requires one or more papers that address issues raised in the seminars. **Note**: This course is offered only in Fall Quarter. *Prerequisite: Open only to senior declared accounting majors.* (2 units)

### *172. Senior Contemporary Business Seminar Series II*

A series of seminars that cover topics pertinent to those pursuing a professional accounting career. Students are required to (1) attend sessions with the course instructor, (2) attend seminars sponsored by the Accounting Department, and (3) choose additional seminars from a list of recommended seminars and presentations offered throughout the University. The course requires one or more papers that address issues raised in the seminars. **Note**: This course is offered only in Winter Quarter. *Prerequisite: Open only to senior declared accounting majors.* (2 units)

### *198. Internship*

Opportunity for upper-division students to work in local accounting/corporate firms. Two written reports and your employer's evaluation of your work will be required. *Prerequisite: Declared accounting major and permission of Instructor and Chair required prior to enrollment.* (2, 3, or 5 units)

### *199. Independent Study*

*Prerequisite: Declared accounting major and permission of Instructor and Chair required prior to enrollment.* (5 units)

## DEPARTMENT OF ECONOMICS

*Professors:* Mario L. Belotti, William F. Donnelly, S.J., Alexander J. Field, David Friedman, John M. Heineke, William A. Sundstrom, Thaddeus J. Whalen Jr.
*Associate Professors:* Gregory A. Baker, Henry Demmert, Linda Kamas, Michael Kevane, Daniel Klein, Helen Popper *(Chair)*, Thomas R. Russell
*Assistant Professors:* Kris J. Mitchener, Dongsoo Shin
*Lecturers:* Fred Foldvary, Hugh J. McAllister
*W. M. Keck Foundation Professor:* Mario L. Belotti
*Michel and Mary Orradre Professor:* Alexander J. Field

As one of the social sciences, economics studies how the choices we make as individuals—as consumers and producers, as savers and investors, as managers and employees, as citizens and voters—combine to determine how society uses its scarce resources to produce and distribute goods and services. This practical, useful discipline provides insights into such important issues as the determinants of wealth and poverty; of unemployment, inflation, and economic growth; of success and failure in the marketplace. The rigorous, systematic analysis that the study of economics brings to bear on these and other real-world issues provides excellent preparation for careers in both the private and the public sectors, as well as for graduate study in economics, business, public policy, and law. Economics graduates pursue varied careers in business, law, banking and finance, government service, education, and private consulting.

### REQUIREMENTS FOR MAJOR AND MINOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce Degree, majors in Economics in the Leavey School of Business must complete the following departmental requirements:

- ECON 114, 115, 180, and three upper-division economics electives

The minor in Economics offered through the College of Arts and Sciences requires the following:

- ECON 11, 12, 13, 114, 115, and 180; two additional upper-division economics courses; and
- MATH 11 or 30

### PREPARATION FOR GRADUATE STUDY

In addition to the standard requirements for graduation, students considering graduate study in economics (leading to an M.A. or Ph.D.) are strongly encouraged to meet with their advisor as early as possible to plan an appropriate course of study.

## LOWER-DIVISION COURSES

### *5. Introduction to Economics*

An overview of the market economy intended for non-economics majors and non-business students. Topics include: markets, pricing, and resource allocation; the basics of international trade; inflation and unemployment; selected issues in economic policy. (4 units)

### *11. Markets and Prices*

The first course in the three-course sequence required of all business students and economics majors. Topics include supply, demand, and the coordinating role of prices in a market economy; comparative advantage as the basis for international trade. (4 units)

### *12. Firms and Industries*

Production, cost, and pricing decisions within the business firm; competition and monopoly; game theory and competitive strategy. *Prerequisite: ECON 11.* (4 units)

### *13. Macroeconomics*

Determinants of national income and product; inflation, unemployment, and business cycles; monetary and fiscal policies; international monetary and financial relations. *Prerequisites: ECON 11 and 12 or permission of instructor.* (4 units)

## UPPER-DIVISION COURSES

*Prerequisites: Unless otherwise noted, ECON 11, 12, and 13, or approval of the instructor are required for all upper-division courses.*

### *101. Resources, Food, and the Environment*

Exploration of relationship among food production, resource use, and the environment. Topics include biotechnology, the green revolution, resource depletion, environmental degradation, and food safety. (5 units)

### *110. Natural Resource Economics*

The economics of renewable and nonrenewable natural resources. Topics may include energy resources, minerals, fisheries, timber, endangered species, and biodiversity. (5 units)

### *114. Intermediate Microeconomic Theory*

Microeconomic theory and applications. Topics include consumer behavior, production costs, risk and uncertainty, game theory, welfare economics, and economics of information. *Additional prerequisite: MATH 11 or 30.* (5 units)

### *115. Aggregate Economic Theory*

Macro, or aggregative, aspects of the economy, emphasizing modern macroeconomic models for explaining the level of output, employment, and prices. (5 units)

### *116. History of Economic Thought*

Evolution of economic ideas and their influences on the development of economic practices. (5 units)

### *117. European Economic History*

Study of the preindustrial environment and industrial growth patterns of Western Europe. (5 units)

### *119. American Economic History*

Study of growth and institutional change in the U.S. economy since colonial times. Topics include early industrialization, the economics of slavery, and the rise of large business enterprises and labor unions. (5 units)

### *120. Economics of the Public Sector*

Microeconomic analysis of the role of government in the market economy. Supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process. (5 units)

### *122. Money and Banking*

Theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy. (5 units)

### *124. Industrial Organization*

Microanalysis of the structure, conduct, and performance of U.S. industry. *Additional prerequisite: ECON 114 or permission of instructor.* (5 units)

### *126. Economics and Law*

An economic analysis of law and legal institutions focusing on the common-law areas of property, contracts, and torts. (5 units)

### *127. Public Finance: Taxation*

Analysis of various tax policies and their effect on the economy. Individual income taxes, corporate income taxes, consumption taxes, payroll taxes, state and local taxes, and other alternative forms of taxation. (5 units)

### *128. Business Cycles and Forecasting*

Study of the nature and causes of economic instability in an industrial economy. (5 units)

### *129. Economic Development*

Analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries. (5 units)

### *130. Latin American Economic Development*

Examination of the economic development of Latin American countries, with particular emphasis on the relationships between economic growth and their social, political, and economic structures. (5 units)

### *134. African Economic Development*

Economic problems and development of sub-Saharan Africa with emphasis on the relationships among social, political, and economic factors. (5 units)

### *135. Gender Issues in the Developing World*

Explores the gendered nature of poverty in the developing world, with special focus on sub-Saharan Africa, using basic economic analysis. (5 units)

### *136. 20th-Century Economic History*

Focuses on the development of the U.S. economy during the 20th century. Topics include the causes and consequences of economic growth, the Great Depression, the rise of government regulation, the changing role of women in the workforce, and the increasing internationalization of markets during the postwar period. *Additional prerequisite: ECON 115 or permission of instructor.* (5 units)

### *137. World Economic History*

Development of western and non-western economies since the late 19th century. Topics include globalization and economic integration, convergence and divergence in economic growth across countries, international monetary systems, impact of alternative policies and institutional regimes on economic performance. (5 units)

### *150. Labor Economics*

Study of labor productivity, incomes, and employment and how these are affected by labor organizations and labor legislation. *Additional prerequisites: BUSN 41 and ECON 114.* (5 units)

### *155. Economics of Immigration*

Examines economic impacts of post-1965 immigration to the United States. Topics include determinants of the migration decision, extent of "assimilation" of immigrants into the U.S. educational system and economy, and economic impacts of immigration on natives. (5 units)

### *156. Real Estate Economics*

Economic analysis of real estate markets, including supply of and demand for land and improvements, legal aspects of real estate ownership and transactions, government regulation and taxation of real estate, and real estate markets in urban and regional economies. (5 units)

### *160. The Economics of Poverty and Inequality*

Examines theories and evidence regarding poverty and economic inequality in the United States. Evaluates alternative public policies aimed at combating poverty. (5 units)

### *162. Capstone: Economic Policy and Perspectives*

Application of economic analysis to contemporary policy issues. To be taken during senior year. Satisfies Capstone Course requirement for economics majors in the College of Arts and Sciences. *Additional prerequisites: ECON 114 and 115 or permission of instructor. Must have senior standing.* (5 units)

### *163. Ethics and Economic Thought*

Use of welfare economics to investigate the issues of distributive justice and market allocation. Topics include utilitarianism, Rawls' maximin principle, Nash fairness, and Arrow's impossibility theorem. *Additional prerequisite: ECON 114.* (5 units)

### *170. Mathematical Economics and Optimization*

Generalization and reformulation of many familiar micro- and macroeconomic models as mathematical systems. Focus on exploring the properties of these models using mathematical techniques. *Additional prerequisites: MATH 12 or 31, ECON 114, or permission of instructor.* (5 units)

### *171. Topics in Mathematical Economics*

Topics in mathematical microeconomics and macroeconomics at the discretion of the instructor. *Additional prerequisites: MATH 12 or 31, ECON 114 and 115, or permission of instructor.* (5 units)

### *172. Game Theory*

Study of multi-person decision problems. Topics include solution concepts for games, strategic behavior, commitment, cooperation, and incentives. Games of complete and incomplete information. Emphasis on applications to real-world economic behavior. *Prerequisites: ECON 114 and MATH 12 or 31.* (5 units)

### *173. Econometrics*

Statistical methods to analyze economic data. Estimation and hypothesis testing using multiple regression; time series and cross-section data. *Additional prerequisites: MATH 12 or 31, and BUSN 41.* (5 units)

### *180. International Economics*

Analysis of the theory of international trade, problems in balance-of-payments adjustments, and international economic policies. (5 units)

### *185. Economics of Technological Change*

The economic determinants and consequences of technological change. Topics include research and development, joint ventures, patents and other intellectual property, university-industry and government-industry collaboration, and the relationship between antitrust and other regulatory policies and technological advances. (5 units)

### *188. Economics Seminar*

Modern economic theories and problems. Satisfies Capstone Course requirement for economics majors in the College of Arts and Sciences. Admission by invitation only. (5 units)

### *197. Economics Colloquium*

Topics selected by instructor. Does not count as an upper-division elective toward the economics major. May be repeated once for credit. (2 units)

### *199. Independent Study*

## DEPARTMENT OF FINANCE

*Professors:* Atulya Sarin, Hersh Shefrin, Meir Statman *(Chair)*
*Associate Professors:* Sanjiv Das, Robert Hendershott, Hoje Jo
*Assistant Professor:* David Tien
*Lecturers:* Jan Strockis, Steven Wade
*Mario L. Belotti Professor:* Hersh Shefrin
*Glenn Klimek Professor:* Meir Statman

Finance is at the center of well-managed businesses, from high-technology companies to mutual fund companies. Development of knowledge and managerial skills in the corporate and investment settings are the major goals of the Finance program.

Graduates with a degree in finance pursue careers as financial analysts, financial planners, investment bankers, stockbrokers, and other specialties. Corporate financial planners and analysts examine which new products and investments will be profitable, analyze the most cost-effective ways to produce them, and determine where to get the money needed to fund new ventures. Personal financial planners and stockbrokers help people make wise investments by selecting good stocks and assembling strong portfolios.

## REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in Finance must complete the following:

- FNCE 121, 124, 125, and three upper-division finance electives.

## UPPER-DIVISION COURSES

### *121. Financial Management*

Introduction to the financial questions facing companies and their answers. Topics include stocks and bond valuation, capital budgeting, short- and long-term financing, financial analysis and forecasting, cash management, credit policy and dividend policy. *Prerequisites: ACTG 11 and 12 and proficiency with spreadsheets.* (5 units)

### *124. Investments and Investment Institutions*

Introduction to the nature and functions of securities markets and financial instruments. The formulation of investment goals and policies, trading strategies, and portfolio management. Emphasis on security analysis and valuation. *Prerequisite: FNCE 121.* (5 units)

### *125. Corporate Financial Policy*

In-depth examination of the interrelationships between corporate investment and financing decisions and their impact on a firm's pattern of cash flows, return, and risk. Special emphasis on the development of analytical techniques and skills for analyzing performance reflected in financial statements. Case studies are used. *Prerequisites: FNCE 121 and 124.* (5 units)

### *126. Money and Capital Markets*

Role and function of financial institutions, financial flows, interest rate structures, money, and capital markets. Emphasis on the implications for the formulation of business financial policy. *Prerequisites: FNCE 121 and 124.* (5 units)

### *128. Real Estate Finance*

Exploration of the real estate market, including investments in residential and commercial real estate by individuals, partnerships, and trusts. Emphasis is on the valuation and cash flow analysis of these projects and an understanding of financing alternatives. *Prerequisites: FNCE 121 and 124.* (5 units)

### *130. Ethics in Finance*

Exploration of the ethical dimension of financial markets. Topics include insider trading, moral hazard, agency, adverse selection, and financial market regulations concerning disclosure, price manipulation, suitability, trading interruptions, margin requirements, and short-sale restrictions. *Prerequisites: FNCE 121 and 124.* (5 units)

### *141. New Venture Finance*

Financial modeling for determining the financial health of companies and strategies for their growth. Topics include mergers and acquisitions, and financing through debt (e.g., asset-based lending) and equity (e.g., initial public offerings). *Prerequisites: FNCE 121 and 124.* (5 units)

### *151. International Finance*

Examination of the functioning of the international monetary system and the financial problems of business firms operating internationally. Transfer of international payments, foreign exchange rates, balance of payments, international liquidity, investment, financial markets, banking, and financial management. *Prerequisites: FNCE 121, 124, and BUSN 80.* (5 units)

### *163. Investment Practice*

The practice of portfolio management. Using a portion of the University's endowment fund to acquire real-life investment experience. Various investment objectives will be explored including derivatives to protect current positions, fixed income, and equity investments. Course meets once a week over two quarters. *Prerequisites: FNCE 121, 124, and instructor approval.* (5 units)

### *198. Internship*

Opportunity for selected upper-division students to work in local governmental units or firms. *Prerequisite: Finance major, successful completion of FNCE 121, and instructor approval.*

### *199. Independent Study*

*Prerequisite: Approval of instructor.*

## DEPARTMENT OF MANAGEMENT

*Professors:* David F. Caldwell, Jacques Delacroix, André L. Delbecq, Terri Griffith, James L. Koch, Dennis J. Moberg, Barry Z. Posner, Manuel G. Velasquez *(Chair)*
*Associate Professors:* Gregory Baker, James L. Hall
*Assistant Professors:* Shawn Berman, Martin Calkins, Tammy L. Madsen
*Senior Lecturers:* Joel K. Leidecker, David R. Palmer
*Charles J. Dirksen Professor of Business Ethics:* Manuel G. Velasquez
*J. Thomas and Kathleen L. McCarthy University Professor:* André L. Delbecq
*Presidential Professor of Ethics and the Common Good:* Dennis Moberg
*Stephen and Patricia Schott Professor:* David F. Caldwell

The Department of Management emphasizes both rigorous analysis and managerial application. Courses are offered in organizational behavior and design, human resource management, industrial relations, managerial communication, leadership, and family business management. Additional courses in strategic management, business and public policy, business ethics, and international management provide a general management perspective.

Management majors are those who want to develop balanced general management skills or to specialize in human resource management. Students in other majors who aspire to supervisory or managerial positions will find several of the department electives useful.

## REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in Management must complete the following:

- MGMT 160, 161, and four courses selected from MGMT 166, 167, 169, 170, 171, 172, 174, 198, and 199

## LOWER-DIVISION COURSE

### *6. Business Ethics*

A normative inquiry into the ethical issues that arise in business and how they should be managed. Attention is given to current moral issues in business, to ethical theories and their implications for these issues, and to the managerial implications. Topics may include truth in advertising, corporate social responsibility, affirmative action government regulation of business, quality of work-life, environmental and resource issues, and ethical codes of conduct. Satisfies the University Core Curriculum requirement in ethics.

## UPPER-DIVISION COURSES

### *160. Organization and Management*

Introduction to organization theory and practice, including management operation, concepts of organization, departmental and interdepartmental relations, and behavior in organizations.

### *161. Organizational Structure and Design*

Theory and practice of organizational design. Issues include departmentation and coordination; the effect of context and technology on structure; and organizational growth, change, and decline. *Prerequisite: MGMT 160.*

### *166. Human Resource Management*

Comprehensive review of the role and functions of human resource management departments in business organizations, with particular emphasis on selection and placement, training and development, and compensation systems. *Prerequisite: MGMT 160 or permission of instructor.*

### *167. Industrial Relations*

Examination of union-management relations. Why do employees join unions? How are organizing campaigns and elections won? What are typical negotiating behaviors and strategies? Lecture/discussion, case analyses, negotiation and arbitration simulations, guest speakers. *Prerequisite: MGMT 160 or permission of instructor.*

### *169. Business and Public Policy*

The impact of public policy on business and how businesses adapt to and influence public policies. Includes ideology, corporate social responsibility, government regulations, and business political activity. Lectures/discussions; case analyses. (MGMT 160 recommended.)

### *170. International Management*

A broadly based course that includes two modules: (1) The international framework for trade and international investment, with a review of the basic vocabulary students are expected to have acquired in BUSN 80. This module includes a critical discussion of the idea of globalization. (2) The designed and staffing of multinational organizational structures; multinational strategies. This course fulfills the advanced ("Group II") business course requirement of the International Business Minor although it is not listed in the relevant brochure. *Prerequisite: BUSN 80. (MGMT 160 recommended).*

### *171. Managerial Communication*

Interpersonal and small group communication. Negotiating behavior. Oral and written communication. Integrates theory and skill-building through reading, case analysis, and practice. *Prerequisite: MGMT 160 or permission of instructor.*

### *172. Special Topics in Management*

Offered occasionally to introduce new topics not covered by existing electives. Topics generally reflect the research interests of the faculty teaching the course. *Prerequisite: MGMT 160.*

### *174. Social Psychology of Leadership*

This course provides both a conceptual framework for understanding leadership and opportunities for developing leadership skills. Generally interactive, the course requires personal reflection into leadership experiences, and field work with executives. **Note**: This course is required for those completing the Leadership Studies Certificate Program. *Prerequisite: MGMT 160 or permission of instructor.*

### *198. Internship*

Opportunity for selected upper-division students to work in local organizations. *Prerequisite: upper-division standing and approval of the Undergraduate Committee.*

### *199. Independent Study*

## DEPARTMENT OF MARKETING

*Professors:* Dale D. Achabal, Albert V. Bruno, Shelby H. McIntyre, Edward F. McQuarrie, Tyzoon T. Tyebjee
*Associate Professors:* Karen F. A. Fox, Kirthi Kalyanam, J. Michael Munson *(Chair)*
*Assistant Professors:* Fabio Caldieraro, SuBom Rhee
*Executive Lecturer:* Frederick M. Hoar
*Adjunct Lecturers:* Buford H. Barr, Stephen J. Corio, Gail H. Kirby
*W. T. Cleary Professor:* Albert V. Bruno
*L. J. Skaggs Distinguished Professor:* Dale D. Achabal

Marketing operates at the cutting edge of a well-managed organization. Development of decision-making and managerial skills are the major objectives of the Department of Marketing Program, with special emphasis in innovation, high technology, retailing, and consumer products.

Marketing is the function that links a business to its markets and customers. Marketing acts as the eyes and the ears for a firm, helping managers identify market opportunities and listen to customer needs and wants. It is also the firm's voice, handling communications with customers and deciding on advertising and sales messages. Finally, strategic marketing addresses competitive threats and opportunities, guiding a firm's efforts to deliver superior value.

Because customer analysis and competitive advantage are so crucial to business success, a degree in marketing provides a solid foundation for a general management career leading to executive responsibilities. It can also provide the basis for a more focused career in such areas as advertising, retailing, sales, new product development, and market research.

### REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in Marketing must complete the following:

- MKTG 181, 183, and 189 and three courses selected from MKTG 165, 174, 175, 176, 178, 182, 184, 185, 186, 187, 188, 198, and 199

Marketing majors are urged to complete both MKTG 183: Buyer Behavior and MKTG 189: Marketing Research by the end of their Junior year. These two courses provide a valuable foundation for all other marketing electives. Also, students are advised to select their three *marketing electives* in areas which complement their career interests. For example, students more interested in high technology marketing might choose MKTG 188: Business to Business Marketing; MKTG 174: Marketing Lessons from Silicon Valley; and MKTG 185: Sales Management. Students interested in advertising and communication might choose MKTG 184: Advertising and Promotion, MKTG 186: Integrated Marketing Communications, and MKTG 187: Brand/Product Management. Those interested in either Consumer or Business to Business marketing might choose MKTG 175: E-Commerce and MKTG 165: Multi-Channel Retail Marketing. Some electives, such as MKTG 185: Sales Manage-

ment; MKTG 187: Brand/Product Management; and MKTG 175: E-Commerce provide useful skills for students interested in pursuing careers in either Consumer or Business to Business marketing. Additionally, the MKTG 198: Internship elective might be chosen with an eye toward selecting an internship topic/company, where possible, which augments the student's career marketing goals.

## UPPER-DIVISION COURSES

### *165. Multi-Channel Retail Marketing*

This course focuses on the design and management of store, catalog, and Internet-based retail channels. Topics covered include how retailers create value for the producer and the end user, the financial and marketing strategies that underlie retailing formats, target marketing decisions, category management, how retail price promotions work, managing customer service, and the execution of retail marketing decisions in stores, catalog and the Internet. Mini cases, video cases, an applied project, and guest speakers from industry will be utilized to provide practical illustration of various concepts and stimulate class discussion. *Prerequisite: MKTG 181.* (5 units)

### *168, 169. Advanced Retail Seminars*

In-depth examination of a number of topics useful to future executives in a retailing environment. Focus is on the use of consumer information and information technology to improve managerial decision making. Topics include value chains of high-performance retailers, merchandise information systems, personnel and sales force management, negotiation, sales promotion and advertising, communications, merchandising, and retail strategy. *Prerequisites: MKTG 181, 165, an internship, and permission of instructor.* (5 units)

### *174. Marketing Lessons Learned From Silicon Valley*

This course is an insider's look at the mystique of Silicon Valley, including some of the companies, personalities, and technologies that have impelled this area's rise as a world center of innovation and change. The course includes a focus on such Silicon Valley leaders as Steve Jobs and Wilf Corrigan, and draws general marketing lessons from their successes and failures. Also, the marketing strategies of some of the Valley's seminal companies (i.e., Fairchild, Apple, Syntex, Genentech, and Raychem) is studied. (**Note**: This course may not be taken by students who completed MKTG 182: Marketing Lessons Learned From Silicon Valley.) *Prerequisite: MKTG 181.* (5 units)

### *175. Electronic Commerce*

What is the role of e*Commerce in today's marketing environment? How are marketers integrating e*Commerce into their marketing activities? What are some of the major problems and opportunities that e*Commerce activities pose for the marketing manager? This course is limited to marketing majors only. *Prerequisite: MKTG 181.* (5 units)

### *176. Services Marketing and Management*

Effective marketing and management in service enterprises, including hospitality, tourism, financial services, retailing, health care, education, accounting, telecommunications, technical and information services, among others. Focus on customer satisfaction, service quality, service design and implementation, pricing, and promotion. Use of cases, field trips, and projects to develop and apply course concepts. *Prerequisite: MKTG 181.* (5 units)

### *178. Marketing Across Cultures*

Provides frameworks for understanding and effectively functioning in cross-cultural markets within the United States as well as in cross-border and other international markets. Examination of the marketing environment, with particular emphasis on cultural aspects, and implications for market entry, product and promotion planning, pricing and distribution. Consideration of markets in Asia, Latin America, and Europe as well as corresponding ethnic markets within the United States, with particular attention to Silicon Valley. Team interview and observational projects, as well as cases and class presentations. (**Note**: This is not a standard international marketing course.) *Prerequisites: MKTG 181 or permission of the instructor, and BUSN 80.* (5 units)

### *181. Principles of Marketing*

Introduction to the fundamental principles of contemporary marketing. Covers the role of marketing in society, marketing strategy and planning, segmentation, product policy, pricing decisions, promotion, and distribution. Stresses topical examples. Emphasizes application of basic principles, information sourcing, analytical thinking, communication skills, and teamwork in case analyses and/or a field project.

### *182. Special Topics in Marketing*

Occasional current and interdisciplinary courses offered on a one-time or infrequent basis or cross-listed with offerings in other departments. Consult quarterly schedule of classes for description. *Prerequisites: MKTG 181 and current standing as a marketing major.* (5 units)

### *183. Buyer Behavior*

How consumers process information and make buying decisions. Investigation of influence factors, such as attitudes, personality, culture, motivation, perception, and reference groups on consumer decision making. Decision processes of industrial buyers in business-to-business markets are also studied and compared to those of nonindustrial buyers in consumer markets. Particular emphasis on understanding the decision-making process (both consumer and industrial) and its application to the development of sound marketing strategy. An applied project, videos, and mini-cases are used to illustrate the practical application of various concepts. *Prerequisites: BUSN 41 and MKTG 181 or permission of instructor.* (5 units)

### *184. Advertising and Promotion*

The role of advertising in marketing. The communication process, definition of advertising objectives, strategy formulation, budgeting, media selection, copy testing, evaluating advertising results, and regulation. Student teams develop and competitively present a comprehensive advertising plan or similar project. *Prerequisite: MKTG 181.* (5 units)

### *185. Sales Management*

This course puts the student in the role of being a prospective Sales or Marketing Manager. The objective is to provide the student with user-level knowledge of sales concepts and management methodologies necessary to effectively perform and manage the sales function. The format of the course enables the student to apply the use of these concepts in both selling consumer products, as well as in high-tech, industrial direct selling. *Prerequisite: MKTG 181.* (5 units)

### *186. Integrated Marketing Communications*

This course is an introduction to integrated marketing communications (IMC). It provides a basic understanding of communication theory, marketing, branding, integrating marcom tactics, planning, and coordination of IMC programs. It also addresses the marcom tactics of public relations, direct response, advertising, collateral, the Internet/WWW, and digital media. The course provides students with the skills necessary to plan, execute, and coordinate an integrated marketing communications campaign. *Prerequisite: MKTG 181.* (5 units)

### *187. Brand/Product Management*

Dynamic decision making using a brand management game. Brand teams make inferences about the business environment, decide on what products to offer, what price to charge, how many salespeople to employ, and how much to budget for advertising, in addition to making production and marketing research decisions. Emphasis on the writing and presentation of the brand plan. *Prerequisite: MKTG 181.* (5 units)

### *188. Business-to-Business Marketing*

The course provides an overview of how business-to-business (B2B) marketing differs from consumer packaged goods marketing. Learn how to apply marketing principles and conceptual frameworks when business sells to business. Understand how such factors as demand, product, buyers, decision making, and relationships affect B2B marketing strategy. Topics covered included product marketing and new product introduction, channels, Web-based marketing, and electronic design and procurement. Some class sessions will feature leading industry practitioners whose comments are then addressed in lecture, group discussion, and creative problem solving exercises. Students will learn how companies that account for over half of our gross domestic product go to market, and gain insights into how various Silicon Valley companies meet the challenges of marketing high technology products. (**Note**: This course may not be taken by students who completed MKTG 182B: Business to-Business Marketing.) *Prerequisite: MKTG 181.* (5 units)

### *189. Marketing Research*

Study of the application of marketing research methodology to the solution of business problems. Role of marketing research: its design, execution, analysis, and presentation. Projects and use of computers to analyze data. Lab fee required. *Prerequisites: BUSN 41 and MKTG 181.* (5 units)

### *198. Internship*

Opportunity for upper-division students to work in local firms and complete a supervised academic project in that setting. *Prerequisites: declared marketing major, either MKTG 183 or 189, and approval of faculty coordinator.*

### *199. Independent Study*

## OPERATIONS AND MANAGEMENT INFORMATION SYSTEMS

*Professors:* Robert A. Collins, Chaiho Kim, Steven Nahmias, Rhonda Lee Righter, Stephen A. Smith
*Associate Professors:* Narendra Agrawal, Charles D. Feinstein, Manoochehr Ghiassi *(Chair)*, Andrew Starbird, Andy A. Tsay
*Assistant Professors:* Aslihan Celik, Siwei Gu, Manoj Parameswaran
*Lecturers:* David Ahlberg, Gerald Klemushin, Richard A. Schaffzin, Joseph Stampher, Sumana Sur
*Joseph S. Alemany Professor:* Chaiho Kim
*JCPenney Research Professor:* Stephen A. Smith
*Naumes Family Professor:* Robert A. Collins

Operations and Management Information Systems (OMIS) focuses on the use of analytical decision-making methods and computer information systems in business organizations. In addition to mastering all the core Leavey School of Business requirements, students specialize in the skills needed to design, implement, and evaluate the computer-based systems that are necessary to manage business operations effectively.

In today's fast-changing, information-driven corporate environment, OMIS majors are in a unique position to develop practical, integrated solutions to complex problems. Their training in both information systems and business places OMIS majors on the fast track toward satisfying and exciting careers.

The OMIS department also offers a minor degree in MIS for both non-OMIS majors in the Leavey School of Business as well as non-Business majors. The minor program provides non-OMIS majors the opportunity to enhance their understanding of information technology in general and how to apply this technology to their major field of study.

## REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in OMIS must complete the following:

### Lower Division

OMIS 30 (Structured Programming)

### Upper Division

Six upper-division courses:

- OMIS 105 (Database Management), OMIS 106 (Systems Analysis and Design), and OMIS 107 (Systems Programming), and three courses from the following list: OMIS 109, OMIS 110, OMIS 111, OMIS 112, OMIS 113, OMIS 117, OMIS 135, OMIS 137, OMIS 150, OMIS 170, and OMIS 173.

## REQUIREMENTS FOR MINOR IN MIS

### Lower Division

The MIS minor must take either OMIS 30 (Structured Programming) or OMIS 31 (Business Application Programming).

### Upper Division

Four upper-division courses as described below:

- OMIS 105 (Database Management System)
- Two courses from the following list:
  - OMIS 107 (Systems Programming)
  - OMIS 111 (Computer Communication Systems)
  - OMIS 113 (Data Warehousing and Data Mining)
  - OMIS 135 (Enterprise Resource Planning Systems)
  - OMIS 137 (Object-oriented Programming)

- One course from the following list:
  - OMIS 150 (Financial Information Systems)
  - OMIS 173 (E-Commerce Technologies)
  - OMIS 198 (Internship)
  - OMIS 199 (Independent Study)

***Additional Requirements for Non-Business Majors*** Non-business majors pursuing minor programs offered by the business school are required to take courses dealing with the basic concepts of Calculus and Analytic Geometry, Statistics and Data Analysis, and Core Business Concepts. The requirements are:

- *Mathematics:* One course from MATH 7 (Calculus for Social Science), MATH 11 (Calculus and Analytic Geometry I), or MATH 30 (Calculus for Business I)
- *Statistics and Data Analysis:* One course from BUSN 40 (Statistics and Data Analysis I), MATH 8 (Introduction to Statistics), PSYC 40 (Statistical Data Analysis), or COMM 110 (Qualitative Research Methods)
- *Business Environment and Core:* Three courses from the following list: BUSN 70, MGMT 160 (Organization and Management), MGMT 161 (Organizational Structure and Design), MKTG 181 (Principles of Marketing), FNCE 121 (Financial Management), or OMIS 108 (Production Management)

## LOWER-DIVISION COURSES

### *17. Introduction to Business Computing*

Use of an integrated set of software tools to solve business problems and communicate results of analysis. Software tools include spreadsheets, databases, graphical tools, and presentation tools. Use of computer networks to access business information. Lab fee required. *Prerequisite: Working knowledge of one word-processing software.* (4 units)

### *30. Structured Programming*

How to develop and implement well-structured programs for business applications using C. Students are required to develop several programming assignments on a variety of computer systems. Foundation for the study of database design and systems programming. Lab fee required. (Students who receive credit for Math 10, COEN 6, COEN 8, or OMIS 31 may not take this course for credit.) (4 units)

### *31. Business Applications Programming*

Develop and implement business application programs using software tools provided by ASP.NET environment. Software tools used will include Visual InterDev and Visual Studio Net. Programming languages used will include Vb Script, Java Script, Visual Basic, and C#. Students will develop both Windows and Web-based applications. Basic concept of database and its uses for E-Commerce and E-Business will be examined. Lab fee required. (Students who take Math 10, OMIS 30, COEN 6, or COEN 8 may not take this course for credit.) (4 units)

### *34. Management Information Systems*

Introduction to management information systems. The technical foundations for understanding information and telecommunications technologies. The use of this knowledge to analyze and design solutions to business problems and case studies and/or projects to illustrate the use of information systems to develop business solutions. Lab fee required. (4 units)

## UPPER-DIVISION COURSES

### *105. Database Management*

A hands-on approach to the design and use of databases for business applications. A three-stage approach to database design: conceptual design using the entity-relationship model, logical design using the relational model, and the physical design of relational databases. Study of query languages, normal forms, and application generation. Use of database software is required. Lab fee required. *Prerequisite: OMIS 30 or 31 or 34.* (5 units)

### *106. Systems Analysis and Design*

Development of methods of structured systems analysis and design. Emphasis on information systems for business applications. Methods include physical modeling, logical modeling, flowcharts, data flow diagrams, hierarchy (HIPO) models, structured English, entity-relationship diagrams, and structure charts. Application of these tools to a systems analysis and design project is required. (5 units)

### *107. Systems Programming*

Discussion of the fundamental concepts of systems programming. Major focus on the overall structure and capabilities of modern operating systems (UNIX/LINUX, Windows, etc.) and how to use operating system facilities to manipulate files and utility programs. Also covers shell and scripting programming concepts for performing system-level programming assignments on dedicated computer systems. Development of several software assignments utilizing systems programming concepts is required. Lab fee required. *Prerequisite: OMIS 30 or equivalent.* (5 units)

### *108. Operations Management*

Survey of analysis and design methods for business systems that produce and deliver goods and services. Topics chosen from the following: process analysis, sales forecasting, production planning and scheduling, inventory control, materials requirement planning, quality control, "just-in-time" manufacturing techniques, and supply chain management. *Prerequisites: BUSN 40 and 41.* (5 units)

### *109. Computer Decision Models*

Methods for solving decision problems encountered in business situations. Emphasis on problem formulation and application of spreadsheet-based algorithms for solution. Linear models and linear programming. Sensitivity analysis. Network models. Integer and nonlinear programming. Decision analysis and value of information. Dynamic analysis and principle of optimality. *Prerequisites: BUSN 40 and 41 and spreadsheet proficiency.* (5 units)

### *110. Computer Simulation Modeling*

Examination of computer simulation modeling for the design and operation of complex processes or systems. Theory and techniques of simulation and simulation languages such as SLAM, GPSS, and GASP; inventory control; assembly and job-shop scheduling; and manufacturing process design. Lab fee required. *Prerequisites: BUSN 40 and 41, and OMIS 30 or 31.* (5 units)

### *111. Computer Communications Systems*

Introduction to the principles and functions of computer communications in today's information systems. Principles of information transfer over both guided and unguided media; principles of networking for both local and wide area networks. Principles of communication over the Internet; principles and functions of electronic commerce. Lab fee required. *Prerequisite: OMIS 30 or 31 or 34.* (5 units)

### *112. Artificial Intelligence for Business*

The applications of artificial intelligence techniques for designing and implementing expert systems for business and industrial applications. Experience in building simple knowledge-based systems using AI programming languages. Lab fee required. *Prerequisite: OMIS 30 or 31.* (5 units)

### *113. Data Warehousing and Data Mining*

This course will examine the processes of collecting data from business transactions and Web browser click-streams, transforming and loading them into data warehouses and data marts, and retrieving information for decision support and customer relationship management. Lab fee required. *Prerequisite: OMIS 30 or 31.* (5 units)

### *117. Software Development Project*

Integration of system and programming concepts to develop a comprehensive software system. Also presents an overview of software development methodology. *Prerequisite: OMIS 30 or 31.* (5 units)

### *135. Enterprise Resource Planning Systems*

ERP systems integrate the data and the processes across a company onto a single computer system. This course provides an analysis of ERP systems technologies, including Client/Server Systems, Networks, Relational Databases, Data Warehouses, and Reengineering methodology. Lab fee required. *Prerequisites: experience with databases is required; OMIS 105 or COEN 178, or instructor's approval.* (5 units)

### *137. Object-Oriented Programming*

Introduction to object-oriented design methodology. Discussion of different programming paradigms, concepts of data abstraction, inheritance, and encapsulation. Topics include an overview of Java Programming language, classes and objects, data abstraction, inheritance, I/O packages, Exceptions, Threads and GUI. Development of several programming assignments using Java is required. Lab fee required. *Prerequisite: OMIS 30 or equivalent.* (5 units)

### *150. Financial Information Systems*

This course focuses on computer-based financial information systems that allows finance and accounting professionals to acquire and manage a company's financial system. Topics include the business functions of a financial information system, the technical aspects of the system, and the management issues of implementing such a system. In addition to conceptual understanding, this course will provide students with hands-on experience with Oracle E-Business Suite Financials. Lab fee required. *Prerequisites: OMIS 30 or 31.* (5 units)

### *170. Physical Database Design*

Methodology for design of physical file structures to support single-and multiple-file applications. Data structures, file structures, file access methods, file manipulation, and algorithmic analysis. *Prerequisite: OMIS 30 or 31.* (5 units)

### *173. E-Commerce Technologies*

An integrated course discussing topics needed to build, operate, and maintain e-businesses. Topics include scripting languages, mark up languages, security, on-line transaction, and multimedia operation. *Prerequisites: OMIS 30 or 31.* (5 units)

### *198. Internship*

Opportunity for selected upper-division students to work in local government units or firms. *Prerequisite: upper-division standing and approval of the Undergraduate Committee.* (1 to 3 units)

### *199. Independent Study*

(1 to 5 units)

# 5

# School of Engineering

The School of Engineering at Santa Clara University has a mission to educate and serve students for the benefit of the Silicon Valley area, the state, the nation, and the world. We do this through academic programs that educate professional engineers who practice with competence, conscience, and compassion, through scholarly activities that create and disseminate new knowledge, and through service activities that benefit our various constituencies and humanity in general.

The School of Engineering confers the degrees of Bachelor of Science in Civil Engineering, Computer Engineering, Electrical Engineering, Engineering, and Mechanical Engineering. Minors in general engineering, computer engineering, and electrical engineering are also available. The program of study for the degree of Bachelor of Science includes courses that fulfill the goals of the University Core Curriculum, School of Engineering curriculum, and engineering departmental major curriculum. Junior standing in the School of Engineering requires qualification by meeting certain minimum academic standards.

The engineering programs at Santa Clara require students to complete extended course sequences in math and science as well as engineering. Success in completing these critical course sequences is highly dependent upon having the necessary technical background at each stage. Accordingly, prerequisite requirements for all engineering courses will be enforced. If there are any questions regarding qualifications for a course, students should consult with the course instructor.

All courses offered through the School of Engineering are taught under tenets set forth in the Engineering Honor Code. The Engineering Honor Code is a long-standing Santa Clara tradition. Instituted at the request of the engineering students, the code states: "All students taking courses in the School of Engineering agree, individually and collectively, that they will not give or receive unpermitted aid in examinations or other course work that is to be used by the instructor as the basis of grading." Students and teachers cooperate and share responsibilities under the Code. Teachers are responsible for making clear what aid is permissible and for using procedures that minimize temptations to violate the code. Students are responsible for behaving honorably, for actively ensuring that others as well as themselves uphold the Code, and for being responsive to violations. Students dominate the administration of the Code, and they take full responsibility for trying cases of alleged violations and for recommending penalties. Alleged violations should be reported to the Engineering Honor Code Committee. More information on the Code and its procedures is contained in a leaflet available from the School of Engineering.

## UNIVERSITY REQUIREMENTS FOR BACHELOR OF SCIENCE IN ENGINEERING

The program leading to the degree of Bachelor of Science consists of a minimum number of quarter units as specified by the department awarding the degree, with a grade point average of at least a C (2.0) in all course work at the University and in coursework completed from all departments in the School of Engineering. Students must declare a major as a condition of registering for the junior year.

For the Bachelor of Science degree, students must fulfill the University requirements indicated below. Students may complete any number of courses that simultaneously fulfill two (or more) requirements provided that the University Core Curriculum Committee has approved the courses as meeting the goals, outcomes, and pedagogical criteria established for each associated requirement. Engineering students, however, must still complete at least 37 units of humanities and social science-based Core Curriculum coursework from the subject areas listed below, exclusive of any coursework completed to satisfy the Core Curriculum's mathematics, natural science, technology, and third (technical) writing requirements.

### English Composition; Third Writing

Three courses: normally, ENGL 1, 2, and an approved technical writing course.

### Western Culture

Two courses in one of the following sequences: (a) ENGL 11, 12, and 13; or (b) HIST 11, 12, and 13; (c) HNRS 11, 12, and 13 (open only to students admitted to the University Honors Program); (d) PHIL 11, 12, and 13; (e) ARTH 11, 12, and 13; or (f) PERF 11, 12, and 13.

### Social Sciences

One course from the list approved by the University Core Curriculum Committee.

### World Culture/Societies

One area studies/regional course from the list approved by the University Core Curriculum Committee.

### United States

One course from the list approved by the University Core Curriculum Committee.

### Mathematics and Natural Sciences

Particular course requirements are in the respective departmental major descriptions.

### Technology

This requirement is fulfilled by COEN 1 or by the combination of (a) ENGR 1 (or ENGR 19 or ENGR 101), (b) an engineering course requiring extensive computer usage (COEN 8, 11, 20, 44, CENG 15, ELEN 33, or approved equivalent), and (c) any upper-division course in the student's major department.

### Ethics

One course in general or applied ethics from the list approved by the University Core Curriculum Committee.

### Religious Studies

Three courses in religious studies or from the list of other approved courses, one each at the introductory, intermediate, and advanced levels, taken in sequence. The introductory-level course is normally taken during the freshman year; the advanced-level course must be taken after completing 88 quarter units.

### Second Language

Recommended proficiency in one foreign language, which may be achieved in high school.

## SHARED SCHOOL OF ENGINEERING LABORATORIES

The School of Engineering's laboratories are contained in three buildings in the Sullivan Engineering Center, originally built in 1960 and refurbished in 1985–86. The facilities are partially supported by the incremental tuition for engineering students.

The School of Engineering operates the Engineering Design Center for the use of both engineering students and faculty. The facility is the main computing resource for engineering students although it is augmented by a number of smaller departmental, satellite computer laboratories. The Design Center has a network of over 100 workstations grouped into four large classrooms and one smaller workroom. Advanced color printing and plotting capability are available throughout the Design Center. All workstations are connected by a high-performance switched Ethernet network. Systems have large, high-resolution color monitors and can utilize over 25 major commercial software packages. Software includes computer-aided design (CAD) and analysis applications for civil, computer, electrical, and mechanical engineering, as well as a variety of programming languages. Hardware platforms include UNIX, LINUX, and Windows-based systems.

## DEPARTMENT OF APPLIED MATHEMATICS

*Associate Professor:* George R. Fegan *(Chair)*
*Assistant Professor:* Stephen A. Chiappari

The Applied Mathematics Department offers only graduate degree programs and operates in a service mode at the undergraduate level. Undergraduate courses offered by the department have been designed to bridge mathematical theory and engineering application and are described below. A complete listing of departmental graduate-level course offerings may be found in the *School of Engineering Graduate Programs Bulletin.*

### UPPER-DIVISION COURSES

***106. Differential Equations***
First-order linear differential equations, systems of linear differential equations, homogeneous systems of linear differential equations with constant coefficients, the Laplace transform, the solution of differential equations by Laplace transform. *Prerequisite: MATH 21.* (4 units)

***108. Probability and Statistics***
Definitions of probability, sets, sample spaces, conditional and total probability, random variables, distributions, functions of random variables, sampling, estimation of parameters, testing hypotheses. *Prerequisite: MATH 21.* (4 units)

***118. Numerical Methods***
Numerical solution of algebraic and transcendental equations, finite differences, numerical differentiation and integration, and solution of ordinary differential equations. Solution of representative problems on the digital computer. *Prerequisites: ability to program in some computer language (including MATLAB commands), COEN 6, 11, or 44 or knowledge of a computer language, MATH 21, and AMTH 106.* (4 units)

## DEPARTMENT OF CIVIL ENGINEERING

*Professor Emeritus:* E. John Finnemore
*Professor:* Sukhmander Singh *(Chair)*
*Associate Professors:* Steven C. Chiesa *(Associate Dean)*, Reynaud L. Serrette
*Wilmot J. Nicholson Family Professor:* Sukhmander Singh

The Civil Engineering Department offers a well-balanced undergraduate program. As one of the leading undergraduate programs in Northern California, the department strives to develop graduates who are capable of solving complex problems with fixed and oftentimes limited resources. The application of state-of-the-art skills, a sound understanding of engineering principles, the ability to communicate and articulate ideas, and preparation for lifelong learning are some of the key areas of focus in the civil engineering curriculum. At the completion of the undergraduate program, graduates are well equipped to enter the practice or pursue advanced studies in any of the civil engineering disciplines. The Civil Engineering Department prides itself on providing students with the necessary guidance to develop their full potential within the context of their own personal experiences and the expectations of the profession.

Through closely maintained relationships and a general open-door policy, in addition to scheduled office hours and mandatory advising, students have an opportunity to seek advice and discuss any issue with the faculty.

As graduates of the civil engineering program, junior engineers get involved in the planning, design, construction, and maintenance of the infrastructure that is critical to daily life, including buildings, transportation systems, airports, irrigation systems, and water supplies.

## CIVIL ENGINEERING

Students must fulfill the following requirements for a *Bachelor of Science in Civil Engineering:*

| **Humanities and Social Sciences** | **Units** |
|---|---|
| University Core requirements | 37 |
| CENG 192B | 2 |
| **Mathematics and Science** | |
| MATH 11, 12, 13, 21, 22 (or AMTH 106), AMTH 108 | 24 |
| CHEM 11 | 5 |
| PHYS 31, 32, 32L, 33, 33L | 14 |
| CENG 20 | 4 |
| **Engineering** | |
| ENGR 1 | 1 |
| CENG 15 | 4 |
| ELEN 50 | 5 |
| MECH 10, 121, 122 | 14 |
| CENG 10, 41, 42, 43, 115, 121, 125, 128, 132, 134, 135, 140, 141, 143, 145, 192A, 193 | 65 |
| **Two design electives** from CENG 119, 133, 136, 137, 138, 142, 144, 147, 150 | 8 |
| **One technical elective** from CENG 118, 123, 139, 148, 162, 163, 199, CHEM 30, or one of the design electives listed above | 3 |
| **The two design electives and one technical elective** should be selected in consultation with an academic advisor to satisfy the requirements of one of the approved emphasis area programs in civil engineering. | |
| **Free Electives** | 4 |
| **Total** | (min) 190 |

## Civil Engineering Laboratories

The *Civil Engineering Laboratories* contain equipment and facilities to support research and teaching in materials engineering, structural engineering, stress analysis, soil mechanics, geology, transportation engineering and surveying, environmental quality, and hydraulics.

The *Computer Analysis and Design Laboratory* maintains Pentium®-based personal computers that are used in course assignments and design projects. Commercial software packages in all the major areas of civil engineering are available on the systems with full documentation available to students.

The *Concrete Testing Laboratory* contains facilities for mixing, casting, curing, and testing concrete cylinders and constructing reinforced-concrete test specimens.

The *Environmental Laboratory* is equipped with instrumentation needed for basic chemical and biological characterization of water, wastewater, and air samples. Several pilot-scale treatment systems are also available.

The *Geology Laboratory* is equipped with extensive rock and mineral samples as well as topographic, geologic, and soil maps.

The *Hydraulics Laboratory* is shared with the Mechanical Engineering Department. It contains a tilting flume that can be fitted with various open-channel fixtures.

The *Soil Mechanics Laboratory* contains equipment for testing soils in shear, consolidation, and compaction and for other physical and chemical tests. Field testing and sampling equipment is also available. A complete cyclic triaxial testing system with computer control is used for both research and instructional purposes.

The *Structures and Materials Testing Laboratory* is equipped with three universal testing machines and a closed-loop MTS hydraulic system. These machines/systems are used for testing a variety of construction materials and assemblies under both static and dynamic loading. Complementing this equipment are a series of digital and analog instruments, and high-speed data acquisition and control systems.

The *Surveying Laboratory* has a wide variety of equipment, such as self-leveling levels, transits, theodolites, and electronic distance-measuring devices available for instructional purposes.

The *Traffic Laboratory* has electronic volume counters that are used in studies to classify vehicles and measure their speeds in user-specified ranges and periods of time. This equipment is used for instructional and research purposes.

## LOWER-DIVISION COURSES

### *5. Project Impacts on the Community and the Environment*

Introduction to the decision-making concepts that determine the feasibility of a project. Aspects of project planning, evaluation, and implementation. Identification of impacts on the community and the environment. (4 units)

### *10. Surveying*

Survey instruments: their use and care. Principles of topographic mapping, linear measurements, leveling, traverses, curves, boundary, and public surveys. Field laboratory. (4 units)

### *15. Computer Applications in Civil Engineering*

Computer-based methods for technical problem solving. Use of spreadsheet programs, math analysis programs, and computer programming to model and analyze engineering systems. Graphical presentation of technical data. Laboratory. (4 units)

### *20. Geology*

Development and formation of geologic materials. Significance of structure, land form, erosion, deposition. Stream and shoreline processes. Surface water. Laboratory. (4 units)

### *41. Mechanics I: Statics*

Resolution and composition of force systems and equilibrium of force systems acting on structures and mechanisms. Distributed forces. Friction. Moments of inertia. *Prerequisites: PHYS 31 and MECH 10.* (4 units)

### *42. Mechanics II: Dynamics*

Dynamics of a particle. Work and energy methods. Momentum methods. Kinetics of systems of particles. *Prerequisite: CENG 41.* (3 units)

### *43. Mechanics III: Strength of Materials*

Analysis of stresses and strains in machines and structural members. Axial forces, torsion, bending, and combined loads. Stability of columns. Energy theorems and their applications. Laboratory. *Prerequisite: CENG 41.* (5 units)

## UPPER-DIVISION COURSES

### *115. Civil Engineering Materials*

Origin, manufacture, and processing of materials used in civil engineering construction, such as metals, wood, cement, concrete, and other engineering materials. Testing methods to determine physical and mechanical properties of the materials. Types, sources, and preventions of material deterioration. Laboratory. *Prerequisite: CHEM 11.* (4 units)

### *118. Construction Engineering*

Construction management. Equipment. Drawings and specifications, cost estimating, bidding. Contracts, bonds, financing, insurance. Labor. Project planning and scheduling. *Prerequisite: junior standing.* (3 units)

### *119. Advanced Construction Enginering*

Advanced discussion of project management topics. Design of temporary construction structures. Design for construction. Crane design. Equipment selection techniques. Construction methodologies and materials selection. Materials handling and supply chain management. Risk management. Environmental issues. *Prerequisite: Junior standing and CENG 118.* (4 units)

### *121. Geotechnical Engineering*

Origin, development, and properties of soils. Classification of soils and applications of engineering mechanics to soils as an engineering material. Water in soils. Soil-testing methods. Compaction, stabilization, consolidation, shear strength, and slope stability. Laboratory. *Prerequisites: CENG 20 and 43.* (4 units)

### *123. Environmental Reaction Engineering*

Reaction stoichiometry and kinetics. Reactions of environmental significance. Dynamic and equilibrium system modeling. Reactor configurations and their effects on extent of reaction. Laboratory. *Prerequisites: CHEM 11 or equivalent, AMTH 106, and junior standing.* (4 units)

### *125. Municipal Engineering Design*

Various aspects of civil engineering as applied in municipal (public works) design practice. Maps and plats; site layout and earthworks; drainage; streets and utilities. Design laboratory. *Prerequisite: CENG 10.* (4 units)

### *128. Engineering Economics*

Time value of money. Economic analysis of engineering projects. Planning and capital budgeting. Rate-of-return analysis. Depreciation. Cash-flow analysis. (2 units)

### *132. Structural Analysis*

Analysis of statically determinate beams, trusses, and frames. Influence lines for beams and trusses. Deflections computed using moment area, virtual work, and other analytical methods. Introduction to statically indeterminate analysis using stiffness and flexibility methods. Introduction of computer applications. *Prerequisites: CENG 15 and CENG 43.* (4 units)

### *133. Timber Design*

Review of timber structural systems. Design of structural members for tension, compression, bending, and shear. Design of shear walls and diaphragms. Timber design project required. May be taken for graduate credit. *Prerequisite: CENG 132.* (4 units)

### *134. Structural Steel Design*

LRFD concepts of structural steel design for building structures. Types of load. Design of individual members including tension members, beams, and columns. Steel design project is required. *Prerequisite: CENG 132.* (4 units)

### *135. Reinforced Concrete Design*

Design methods of reinforced concrete structures. Types of loading. Ultimate design method of reinforced concrete members considering flexure, shear, and axial forces. Anchorage and development length of the reinforcing bars are discussed. Laboratory includes experiments and design sessions in order to develop a structural design project in reinforced concrete. *Prerequisite: CENG 132.* (5 units)

### *136. Advanced Concrete Structures*

Analysis and design of reinforced-concrete beams and columns for flexure, shear, axial load, torsion, and anchorage. Behavior and design of reinforced-concrete frame and frame-wall structures for gravity and lateral loads. Discussion of ACI code requirements for ductile detail in the reinforced concrete structures. May be taken for graduate credit. *Prerequisite: CENG 135.* (4 units)

### *137. Earthquake Engineering Design*

Introduction to the source, propagation, and measurement of seismic activity and its effect on structures. Introduction to UBC, NEHRP, and SEAOC provisions for seismic design. Special considerations for earthquake-resistant design of steel, timber, and reinforced-concrete structures. May be taken for graduate credit. *Prerequisite: CENG 132.* (4 units)

### *138. Geotechnical Engineering Design*

Foundation exploration; bearing capacity and settlement analysis; spread foundations; piles and caissons; earth-retaining structures; loads on underground conduits; subsurface construction. May be taken for graduate credit. *Prerequisites: CENG 121 and 135.* (4 units)

### *139. Groundwater Hydrology*

Groundwater occurrence, flow principles, flow to wells, and regional flow. Groundwater contamination, management, and models. Field methods. Field trips. Laboratory. *Prerequisite: MECH 122.* (3 units)

### *140. Water Resources Engineering*

Concepts of various aspects of water resources: surface water, groundwater, water supply and distribution, hydraulic structures and irrigation. Physical hydrology. Importance of water resources to the total needs of the community. Laboratory. *Prerequisite: MECH 122.* (4 units)

### *141. Hydraulic Engineering*

Principles of hydraulics; flow in pipes and pipe networks; water hammer and surge tanks; steady flow in open channels; hydraulic machinery. *Prerequisites: CENG 15 and MECH 122.* (4 units)

### *142. Water Resources Design*

Design of system components for water supply and flood control projects including storage facilities, closed conduits, open channels, well fields, and pumping systems. *Prerequisites: CENG 140 and 141.* (4 units)

### *143. Environmental Engineering*

Water and air quality. Water supply and pollution control; air pollution control. Management of solid wastes. Laboratory. *Prerequisites: CHEM 11, MATH 12 and junior standing.* (4 units)

### *144. Environmental Systems Design*

Design of treatment and distribution systems for potable water. Design of collection and treatment systems for water pollution control and wastewater reclamation. Laboratory. *Prerequisites: CENG 141 and 143.* (4 units)

### *145. Transportation Engineering Design*

Transportation systems analysis and design. Traffic flow. Geometric design of systems. Principles of highway design. Planning, construction, and operation of transportation systems. Transportation policies and economics. *Prerequisites: CENG 10 and junior standing.* (4 units)

### *147. Pavement Design*

Paving materials. Geometric and structural design of highways. Urban street layout and details. Layout and design of airport runways. *Prerequisites: CENG 121 and 135.* (4 units)

### *148. Structural Systems*

Introduction to principles for choosing a structural configuration. Discussion of fire protection. Estimation of design loads. Approximate techniques for system design and evaluation. Horizontal and vertical subsystems. *Prerequisite: CENG 132.* (3 units)

### *150. Traffic Engineering: Design and Operations*

Basic characteristics of motor-vehicle traffic, highway and intersection capacity, applications of traffic control devices, traffic design of parking facilities, engineering studies, signal design, traffic safety, design of crash barriers. May be taken for graduate credit. *Prerequisite: CENG 145.* (4 units)

### *162. Computational Water Resources*

Use of professional applications software to design and evaluate facility components and systems for water resources engineering projects. Laboratory. *Prerequisites: CENG 140 and 141.* (3 units)

### *163. Solid Waste Management*

Characterization of solid waste streams. Overview of collection, transport, processing, and disposal options. Waste stream reduction and resource recovery strategies. (4 units)

### *188. Co-op Education*

Practical experience in a planned program designed to give students work experience related to their academic field of study and career objectives. Satisfactory completion of the assignment includes preparation of a summary report on co-op activities. P/NP grading. May be taken for graduate credit. (2 units)

### *189. Co-op Technical Report*

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op advisor required. Letter grades based on content and presentation quality of report. May be taken for graduate credit. (2 units)

### *192A. Civil Engineering Design Methods*

Introduction to problem-solving methodology for design of civil engineering systems and components. Applications of engineering techniques and procedures to civil engineering design. Preliminary design studies and evaluation of alternatives. Environmental impact assessment. Selection of a topic for the Senior Design Project (CENG 193) and initial conceptual design. *Prerequisite: senior standing.* (2 units)

### *192B. Technical Writing for Civil Engineers*

Organization of engineering proposals and reports. General aspects of technical communications. Content and organization of written contract documents. Development of oral presentation skills and strategies. *Prerequisites: English 2 and concurrent enrollment in CENG 192A.* (2 units)

### *193. Senior Design Project*

Investigation of an approved civil engineering project. The design process—including problem formulation, analysis, preliminary design, final design, and plans—is completed. Formal public presentation of results. *Prerequisites: CENG 192A and 192B.* (4 units)

### *198. Internship*

Time off campus with an engineering organization. Different aspects of work in the assigned professional office. Oral and written reports. *Prerequisites: senior standing and approval of internship coordinator.* (4 or 8 units)

### *199. Directed Research*

Investigation of an approved engineering problem and preparation of a suitable project report. Conferences with faculty advisor are required. *Prerequisite: junior standing.* (1–5 units)

## DEPARTMENT OF COMPUTER ENGINEERING

*Professors:* Ruth E. Davis, Nam Ling *(Associate Dean)*
*Associate Professors:* Ronald L. Danielson, Daniel W. Lewis *(Chair)*, Qiang Li, Weijia Shang
*Assistant Professors:* Darren Atkinson, Hans Peter Dommel, Silvia Figueira, JoAnne Holliday, John Noll
*Clare Booth Luce Professor:* JoAnne Holliday
*Senior Lecturer:* Neil Quinn
*Lecturer:* Rani Mikkilineni

The Computer Engineering degree features a balanced core program in which each student studies the engineering aspects of hardware and software as well as the mathematical foundations of computation. The Computer Engineering electives permit students to build on this core with varying emphasis, depending on their interests. The Computer Engineering Program is supported by the facilities of the School of Engineering and the University's Academic Computing Center. The principal teaching computer system in the School of Engineering is a network of high-end workstations and X-terminals in the Engineering Design Center—a well-maintained sophisticated computing system available to undergraduate as well as graduate students.

## COMPUTER ENGINEERING

Students must fulfill the following requirements for a *Bachelor of Science in Computer Engineering:*

| **Humanities and Social Sciences** | **Units** |
|---|---|
| University Core requirements | 37 |
| ENGL 182 | 4 |
| **Mathematics and Science** | |
| MATH 11, 12, 13, and 21 | 16 |
| AMTH 106 (or MATH 22) and 108 (or MATH 122) | 8 |
| MATH 53 or MATH 160 or AMTH 118 | 4 |
| CHEM 11 | 5 |
| PHYS 31, 32, 32L, 33, 33L | 14 |
| **Engineering** | |
| ENGR 1 | 1 |
| ELEN 50, 115, 153 | 15 |
| COEN 11, 12, 19, 20, 21, 70, 120, 122, 146, 174, 177, 179, 194, 195, and 196 | 64 |
| **Computer Engineering Electives** | |
| Three additional upper-division courses selected from COEN 100-180, ELEN 123, (or MECH 123), 133, and 134, forming a coherent emphasis area selected in consultation with an academic advisor. | (min) 12 |
| **Integrated Education Requirement** *(one of the following)* | (min) 4 |

a. Study abroad 8 or more units taken at a foreign university. Credit earned may not duplicate any SCU course work.
b. Co-Op in Industry: Work experience (COEN 188) may be part-time, but must total to an equivalent of six months of full-time employment. Tech report (COEN 189) is nominally 10-20 pages in length, similar in format to a senior thesis report, and normally about something from the work experience (with permission of employer).
c. Preparation for graduate study in computing: 8 or more units of additional upper-division COEN electives, selected from upper-division or graduate COEN course offerings
d. Preparation for a career in business: 8 or more units selected from BUSN 80, COMM 12, 20, 25, or 27, or any courses from the departments of MGMT, MKTG, ECON, or EMGT. These courses cannot also be used to satisfy University Core requirements.
e. Academic minor or a second major

f. B.S./M.S. Five-Year Program: This option satisfies the Integrated Education requirement by being admitted into either the MSCE or MSSE degree offered by the department. Graduate courses listed here are not counted towards the specific course requirements of the B.S., but rather are applied to your M.S. program after completion of the B.S. However, if you fail to be admitted into the M.S. program prior to graduation from your B.S. program, you can alternatively count these courses and their units as if you were completing the option above called "Preparation for graduate study in computing."
g. Undergraduate Research: 6 or more units of COEN 197

**Free Electives**
Any additional courses so that the total number of units in the program is at least 187

**Total** (min) 187

## Minor in Computer Engineering

Students must fulfill the following requirements for a *Minor in Computer Engineering:*

a. COEN 11, 44, MATH 10, or OMIS 30
b. COEN 12, or MATH 61
c. COEN 20
d. COEN 21
e. Four courses selected from COEN 70 and any upper-division computer engineering lecture courses (i.e. COEN 100-180)

Work completed to satisfy these requirements must include at least two courses beyond any free electives or other courses required to earn the bachelor's degree in the student's primary major.

## Concentration in Information Assurance (IA)

Santa Clara University has applied for recognition by the National Security Agency (NSA) as a Center of Excellence in Information Assurance Education (COEIAE). Although no formal designation of a concentration in IA is currently available from the department, the following curriculum is consistent with the recommendations of the national INFOSEC Education and Training Program.* Computer Engineering majors wishing to develop an expertise in Information Assurance should select their degree options as follows:

1. Upper-Division COEN Electives: AMTH 387, COEN 250, and one of COEN 150, 252, 253, or MATH 196 (Digital Watermarking). With the exception of COEN 150, students wishing to use these courses to satisfy upper-division COEN electives must seek formal approval in the form of a petition.

* http://www.nsa.gov/isso/programs/nietp/newspg1.htm

2. Integrated Education Requirement: Either a six-month co-op in IA (Federal Agency preferred), or 8 additional units selected from COEN 150, COEN 178, COEN 252, COEN 253, COEN 350, COEN 351, MATH 196 (Digital Watermarking)
3. Senior Design Project: Should involve security-related activities approved and mentored by designated IA faculty

## Computer Engineering B.S./M.S. 5-year Combined Program

Under the combined B.S./M.S. Program, a full-time SCU undergraduate student can begin work on courses required for a master's degree before the B.S. degree requirements are complete, typically leading to a master's degree in computer engineering or software engineering within a year of obtaining the bachelor's degree. This program is open only to students at Santa Clara University who are completing a B.S. degree in either computer engineering or computer science.

No course can be used to simultaneously satisfy requirements in both the B.S. and M.S. degree programs. However, completion of 8 or more units of courses in computer engineering taken for the masters degree will satisfy the Integrated Education requirement of the B.S. program in computer engineering. Moreover, some courses required by the MSCE or MSSE degree programs are normally replaced by free electives due to similar undergraduate coursework.

Students in this program will receive a B.S. degree after satisfying the standard undergraduate degree requirements. To earn the M.S. degree, students must fulfill all the requirements for the M.S. degree specified in the graduate catalog, including the completion of 45 units of course work beyond the bachelor's degree.

Applications for admission to the graduate program may be submitted anytime after grades have been posted at the end of the spring quarter of their junior year. If admitted, students may begin taking graduate courses no earlier than the fall term of their senior year. The GRE examination is waived, but students must satisfy all other admission requirements.

## Computer Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) (operated jointly with the Department of Electrical Engineering) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Computer Systems and Parallel Processing Research Laboratory* supports research in systolic array design, interconnection networks, parallel operating systems, formal design verification, expert system development for architectural design, parallel software development methodology, application-oriented parallel algorithms, and VLSI design.

The *Digital Systems Laboratory* (operated jointly with the Electrical Engineering Department) provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Distributed Computing Research Laboratory* is designed to support a variety of research activities in distributed computing, including parallel architectures; parallel applications; high-performance, high-speed, local area networks; light-weight protocols; and distributed operating systems.

The *Multimedia Compression Laboratory* supports research in video/audio compression and decompression.

The *Multimedia Education Laboratory* (operated jointly with the Department of Electrical Engineering) is dedicated to the development and delivery of multimedia educational resources and to the development of tools to create and present these resources. The laboratory is equipped with eight UNIX workstations with high-speed ATM networking.

The *Object Technology Laboratory* (OTL) is a center for research and education in all aspects of object technology, which is a new paradigm in software system design, development, and implementation. Sponsored research projects conducted at OTL address the theoretical development and application of object technology. Advanced seminars and short courses sponsored by OTL provide an opportunity to learn about the latest developments in object technology.

The *Software Engineering Research Laboratory* is a dedicated facility for the support of various research activities aimed at developing engineering techniques and tools that help produce and validate high-quality software. Specific research activities include formal specification and verification methods/tools, design framework for concurrent systems; Case architect, logic programming paradigms, and automatic reasoning.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. The laboratory is orienting its activities towards storage interfaces and networked storage systems. Technical advances in disk drive technology are tracked and analyzed in terms of emerging applications opportunities. Symposia and workshops on data storage technology are undertaken, and documents of historical interest are produced for the general use of the storage industry. Our head/media disk drive spin stand experimental facility has been relocated nearby off-campus and is available for hardware studies.

## LOWER-DIVISION COURSES

### *1. Understanding Digital Technologies*

Overview of major technical areas in digital computers: semiconductor devices, computer architecture, software development and systems, and computer networks. Coverage of fundamental concepts, historical development trends, current state of the art, and challenges to continued development in each area. Students gain an intuitive understanding of the workings of digital computer technology, an ability to put new developments in context, and an appreciation for the impact of these technologies on society. Course satisfies the University Core requirement in technology. (This course is not intended for engineering majors.) *Prerequisite: high school algebra.* (4 units)

### *6. Introduction to Computing*

Introduction to C++. Data types, variables, functions, parameters, control constructs, I/O. Use of simple C++ classes. Problem definition; design and implementation of algorithms. Elements of logic and logic expressions. Concept of recursion. Testing and debugging. Internet information access tools. Overview of computing as a discipline. Credit not allowed for both COEN 6 and COEN 11, MATH 10 or OMIS 30. (5 units)

### *11. Introduction to Computing*

Overview of computing as a discipline. Introduction to programming: problem definition; design and implementation of algorithms; functional decomposition; simple data structures (arrays, lists). Elements of logic and logic expressions. Concept of recursion. Programming in the C language: data types, variables, functions, parameters, control constructs, input and output, pointers. Program development in the UNIX environment: editing, compiling, linking, testing, and debugging. (Credit not allowed for more than one introductory programming class, such as COEN 11, MATH 10, or OMIS 30.) (5 units)

### *12. Abstract Data Types and Data Structures*

Data abstraction: abstract data types; information hiding; interface specification. Basic data structures: stacks, queues, lists, binary trees, hashing, tables, graphs; implementation of abstract data types in the C language. Internal sorting: review of selection, insertion, and exchange sorts; quicksort, heap-sort; recursion. Analysis of run-time behavior of algorithms; Big-O notation. Introduction to classes in C++. Completion of at least four sizable programming assignments (400 lines). *Prerequisite: COEN 011. Recommended corequisite: COEN 019 or MATH 51.* (Credit not allowed for more than one introductory data structures class, such as 012 or MATH 61.) (5 units)

### *19. Discrete Mathematics*

Relations and operations on sets, orderings, elementary combinatorial analysis, recursion, algebraic structures, logic, and methods of proof. (Also listed as MATH 51.) (4 units)

### *20. Introduction to Embedded Systems*

Introduction to computer organization: CPU, registers, buses, memory, I/O interfaces. Number systems: arithmetic and information representation. Assembly language programming: addressing techniques; arithmetic and logic operations, branching and looping, stack operations, procedure calls, parameter passing, interrupts. C language programming: pointers, memory management, stack frames, interrupt processing. Multi-threaded programming; pre-emptive and non pre-emptive kernels; shared resources; scheduling. *Prerequisite: COEN 12 or MATH 61.* (5 units)

### *21. Introduction to Logic Design*

Boolean functions and their minimization. Designing combinational circuits, adders, multipliers, multiplexers, decoders. Noise margin, propagation delay. Bussing. Memory elements: latches and flip-flops; timing: setup and hold time; registers; counters. Implementation in standard cells, programmable logic, PLD, and FPGA. Use of industry quality CAD tools for schematic capture and HDL in conjunction with FPGAs. (Also listed as ELEN 21.) *Co-requisite: COEN 21L.* (4 units)

### *21L. Logic Design Lab*

Laboratory for COEN 21. (Also listed as ELEN 21L.) *Co-requisite: COEN 21.* (1 unit)

### *44. Applied Programming*

Introduction to computer operating systems. Elements of computer programming in C, including input/output, branching and loops, structured programming, programming for computational efficiency. Programming of elementary mathematical operations. Applications to engineering problems. *Co-requisites: MATH 21 and CENG 41.* (5 units)

### *70. Formal Specification and Advanced Data Structures*

Specification, representation, implementation, and validation of advanced data structures. Object-oriented design and programming in a strongly typed functional language (Haskell) with emphasis on reliable reusable software. Formal specification of advanced data structures (graphs, sets, bags, tables, environments, trees). Informal use of specifications to guide implementation and validation of programs. Guidelines and practice in designing for and with reuse. *Prerequisites: COEN 12 and 19.* (5 units)

## UPPER-DIVISION COURSES

### *120. Real Time Systems*

Design and implementation of real-time computer systems. Use of Unified Modeling Language (UML) for characterizing and describing real time systems, along with the practical application of two industrial strength software packages. *Prerequisite: COEN 20 and 21; co-requisite: COEN 120L.* (4 units)

### *120L. Real Time Systems Laboratory*

Laboratory for COEN 120. *Co-requisite: COEN 120.* (1 unit)

### *122. Computer Architecture*

Overview of computer systems, CPU design, computer arithmetic, instruction set architectures, pipelining, micro-programming techniques, memory hierarchies and management, input/output sub-system organization, hardware description languages. Laboratory project consists of a design of a CPU. *Prerequisite: COEN 20 or ELEN 33 and 21.* (5 units)

### *127. Advanced Logic Design*

Contemporary design of finite-state machines as system controllers using MSI, PLDS or FPGA devices. Minimization techniques, performance analysis, and modular system design. Design and analysis of asynchronous systems. (Also listed as ELEN 127.) *Prerequisite: COEN 21; co-requisites: COEN 127L and ELEN 115.* (4 units)

### *127L. Advanced Logic Design Lab*

Laboratory for COEN 127. Design, construction, and testing of controllers from verbal specs. Use of CAD design tools. (Also listed as ELEN 127L.) *Co-requisite: COEN 127.* (1 unit)

### *129. Current Topics in Computer Engineering*

Subjects of current interest. May be taken more than once if topics differ. (4 units)

### *145. Introduction to Parallel and Concurrent Programming*

Concept of concurrency, thread programming, thread/process synchronization, synchronization algorithms and language constructs, shared-memory vs. message-passing. Parallel programming concept, performance metrics, overview of multiprocessor architectures (block level), evaluation of parallel algorithms, data parallel programming, shared-memory and message-passing parallel programming. Case studies on application algorithms. *Prerequisite: COEN 177; Pre- or Co-requisite: COEN 179 (or MATH 163).* Knowledge of C recommended. (5 units)

### *146. Computer Networks*

The ISO Open Systems Interconnect model. Data communications issues. Circuit and packet switching. Media access control protocols for shared channels: ALOHA and its derivatives, CSMA, CSMA/CD, token bus and ring, other protocols. Error detection and recovery. Sliding window techniques. Routing algorithms. Flow control. TCP/IP, Client/Server model. Network analysis techniques. Queuing systems, throughput-delay analysis. Laboratory consists of projects on software development of network protocols and applications. *Prerequisites: COEN 20 and MATH 108.* (5 units)

### *148. Computer Graphics Systems*

Interactive graphic systems. Graphics primitives, line and shape generation. Simple transforming and modeling. Efficiency analysis and modular design. Interactive input techniques. 3D transformations and viewing, hidden surface removal. Color graphics, animation, real-time display considerations. Parametric surface definition and introduction to shaded-surface algorithms. Offered in alternate years. *Prerequisites: MATH 53 and COEN 70 or MATH 61.* (5 units)

### *150. Introduction to Information Security*

Overview of information assurance. Legal and ethical issues surrounding security and privacy. How viruses work and secure coding techniques. Java security. Security in wireless networks. Other related topics. *Prerequisites: COEN 177 or COEN 146.* (4 units)

### *171. Principles of Design and Implementation of Programming Languages*

High-level programming-language concepts and constructs. Costs of use and implementation of the constructs. Issues and tradeoffs in the design and implementation of programming languages. Critical look at several modern high-level programming languages. Offered in alternate years. *Prerequisite: COEN 70 or MATH 61.* (4 units)

### *172. Structure and Interpretation of Computer Programs*

Techniques used to control complexity in the design of large software systems. Design of procedural and data abstractions; design of interfaces that enable composition of well-understood program pieces; invention of new, problem-specific languages for describing a design. Offered in alternate years. *Prerequisites: COEN 19 and 70 or permission of the instructor.* (5 units)

### *173. Logic Programming*

Application of logic to problem solving and programming; logic as a language for specifications, programs, databases, and queries; separation of logic and control aspects of programs; bottom-up reasoning (forward from assumptions to conclusions) versus top-down reasoning (backward from goals to subgoals) applied to problem solving and programming; non-determinism, concurrency, and invertibility in logic programs. Programs written and run in Prolog. Offered in alternate years. *Prerequisite: COEN 70 or MATH 61 and COEN 19 or MATH 51 or 52.* (5 units)

### *174. Software Engineering*

Object-oriented approach to software development. Software development life cycle. Project teams, documentation, and group dynamics. Software cost estimation. Requirements engineering. Data modeling, object modeling, and object-oriented analysis. Object-oriented programming and design. Software testing and quality assurance. CASE tools. *Prerequisites: COEN 12, COEN 70, or permission of instructor and previous use of UNIX workstations.* (5 units)

### *175. Introduction to Formal Language Theory and Compiler Construction*

Introduction to formal language concepts: regular expressions and context-free grammars. Compiler organization and construction. Lexical analysis and implementation of scanners. Top-down and bottom-up parsing and implementation of top-down parsers. An overview of symbol table arrangement, run-time memory allocation, intermediate forms, optimization, and code generation. *Prerequisite: COEN 70 or MATH 61.* (5 units)

### *176. Software Tools Design*

The design techniques for building good software tools. UNIX shell and systems programming: filters, pipes, files, program arguments, and other facilities that make basic tools work well together. Web programming: HTML, Java, Java script, CGI, and Perl. Learning by examination and modification of existing tools. *Prerequisites: COEN 70 or MATH 61, and previous use of UNIX workstations.* (5 units)

### *177. Operating Systems*

Introduction to organization of operating systems. Management of memory, processors, and other system resources; buffering: overlapping I/O and CPU processes, reducing rotational latency. Deadlock problems and avoidance. Process interaction and communication. Sharing and protection of processes and data. File systems: directory structure, file layout, data space management. Implementation considerations. *Prerequisites: COEN 20 and either COEN 70 or MATH 61.* (5 units)

### *178. Introduction to Database Systems*

ER diagrams and the relational data model. Database design techniques based on integrity constraints and normalization. Database security and index structures. SQL and DDL. Transaction processing basics. *Prerequisite: COEN 70 or MATH 61.* NCX† (5 units)

### *179. Theory of Algorithms*

Preliminaries: measuring work done by algorithms. Nonnumerical algorithms: searching, sorting, graph spanning and traversal, string matching. Numerical topics: polynomial and matrix arithmetic. P and NP completeness. (Also listed as MATH 163.) *Prerequisites: COEN 19 or MATH 52, and COEN 12 or MATH 61.* (4 units)

### *180. Introduction to Information Storage*

Storage techniques and mass storage devices. Use of memory in computer systems. Design of semiconductor, magnetic and optical (disk drives), and magnetic tape memories. Storage controllers, computer interfaces, system software interfaces. Emphasis on current mass storage devices and interfaces: SCSI, IPI, ST506, ESDI. (Also listed as ELEN 180.) *Prerequisites: COEN 20 and 21; COEN 122 recommended.* (4 units)

### *188. Co-op Education*

Practical experience in a planned program designed to give students work experience related to their academic field of study and career objectives. Satisfactory completion of the assignment includes preparation of a summary report on co-op activities. P/NP grading. May not be taken for graduate credit. (2 units)

### *189. Co-op Technical Report*

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department adviser required. Letter grades based on content and quality of report. May be taken twice. May not be taken for graduate credit. (2 units)

### *194. Design Project I*

Specification of an engineering project, selected with the mutual agreement of the student and the project adviser. Complete initial design with sufficient detail to estimate the effectiveness of the project. Initial draft of the project report. *Prerequisite: ENGL 182.* (2 units)

† Exempted from challenge

### *195. Design Project II*

Continued design and construction of the project, system, or device. Initial draft of project report. *Prerequisite: COEN 194.* (2 units)

### *196. Design Project III*

Continued design and construction of the project, system, or device. Formal public presentation of results. Final report. *Prerequisite: COEN 195.* (2 units)

### *197. Research*

Involves working in a one-year-long research project with one of the faculty members. Students should register three times in a row for a total of 6 units. Does not substitute for the senior project, which may be a continuation of the research done. Registration requires the faculty member's approval. Students must have junior or senior status and a minimum GPA of 3.0. (2 units)

### *199. Independent Study*

Open to department scholars only. (1–5 units)

## DEPARTMENT OF ELECTRICAL ENGINEERING

*Professor Emeritus:* Shu-Park Chan
*Professors:* Timothy J. Healy *(Acting Chair)*, Samiha Mourad, Dragoslav D. Siljak, Sally L. Wood, Cary Y. Yang
*Associate Professors:* Tokunbo Ogunfunmi, Mahmud Rahman, Aleksandar Zecevic
*Assistant Professors:* Shoba Krishnan, Garret Okamoto
*Adjunct Professor and Director, Institute for Information Storage Technology:* Albert S. Hoagland
*Thomas J. Bannan Professor:* Timothy J. Healy
*Benjamin and Mae Swig Professor:* Dragoslav D. Siljak,
*William and Janice Terry Professor:* Samiha Mourad

Electrical engineering includes the design, construction, and operation of electrical components, circuits, and systems. Electrical engineers are concerned with all phases of the transmission of information such as in radio, television, telephone systems, fiber optics, wireless communication, satellite communication, and electric power, and advancing integrated circuit design, test, and implementation. Information processing and storage equipment, computers and networks used by business, industry, and government are included in their major area of interest.

Laboratories are an important part of most undergraduate courses in the Electrical Engineering Program. Use of appropriate laboratory equipment, design tools, and components demonstrates fundamental concepts of the courses and acquaints students with methods and tools they may use after graduation. The program is supported by the facilities of the University's Academic Computing Center, as well as by the School of Engineering Design Center. The department supports eight major teaching and research laboratories, three additional laboratories used only for teaching, and a laboratory dedicated to the support of senior design projects. The three teaching laboratories cover the fields of electric circuits, electronic circuits, and logic design.

## ELECTRICAL ENGINEERING

Students must fulfill the following requirements for a *Bachelor of Science in Electrical Engineering:*

| **Humanities and Social Sciences** | **Units** |
|---|---|
| University Core requirements | 37 |
| ENGL 182 | 4 |
| **Mathematics and Science** | |
| MATH 11, 12, 13, 21, AMTH 106 (or MATH 22), AMTH 108 (or MATH 122) | 24 |
| CHEM 11 | 5 |
| PHYS 31, 32, 32L, 33, 33L, 34 | 19 |
| **Engineering** | |
| ENGR 1 | 1 |
| CENG 41 | 4 |
| COEN 11,12 | 10 |
| MECH 10, 121 | 9 |
| ELEN 21, 21L, 33, 50, 100, 104, 105, 110, 115, 151, 194, 195, 196 | 51 |
| **Technical Electives** | |
| Four technical electives selected from upper-division electrical engineering courses; or, with advisor's approval, COEN 120, 122, 146 or selected first-year graduate level electrical engineering courses (min) | 16 |
| **Two Free Electives** (min) | 8 |
| Two additional courses | |
| **Professional Development** *(one of the following)* (min) | 2 |

a. Study abroad (4 or more units in any subjects that do not duplicate other course work: Excess units may be used to satisfy other degree requirements)
b. One co-op course. Students may take one academic year quarter and a summer term for co-op as part of a four-year program. (See Cooperative Education Program on page www.scu.edu/bulletin/undergraduate/engr-programs.cfm.)
c. Preparation for graduate study in electrical engineering (4 or more units of additional upper-division or graduate ELEN electives)
d. Participation in combined B.S./M.S. program (See Combined B.S./M.S. Program on this page.)
e. Completion of an approved minor in any field of engineering or science

| | |
|---|---|
| **Additional Electives** | |
| Any additional courses so that the total number of units in the program is at least 190 | |
| **Total** (min) | 190 |

## Minor in Electrical Engineering

Students must fulfill the following requirements for a minor in *Electrical Engineering:*

a. ELEN 21, 21L
b. ELEN 50
c. ELEN 115
d. Two courses selected from ELEN 100, 104, 105 110 and 151
e. Three additional upper division ELEN lecture courses (i.e. any ELEN 1XX lecture courses except ELEN 188–189)

Work completed to satisfy these requirements must include at least two courses beyond any free electives or other courses required to earn the bachelor's degree in the student's primary major.

## Combined B.S./M.S. Program in Electrical Engineering

Under the Joint B.S./M.S. Program, a full-time undergraduate student can begin work on courses required for a master's degree before the B.S. degree requirements are complete, typically leading to a master's degree in electrical engineering within a year of obtaining the bachelor's degree. This program is open to electrical engineering majors with a grade point average of at least 3.2 in electrical engineering, math, and physics courses. Candidates are required to file a regular MSEE program of studies, which must be approved and signed by the advisor. Courses listed in this program of studies cannot be included in courses that satisfy the bachelor's degree program requirements. To earn the M.S. degree, students in this joint program must complete 45 units of course work beyond the bachelor's degree requirements, and fulfill all the requirements for the M.S. degree specified in the graduate catalog. However, the program of studies for the M.S. degree may include up to 20 units of elective course work from ELEN 112, 116, 117, 118, 127, 130, 133, 134, 141, 143, 144, 152, 153, 154, or 155 (courses designated in the bulletin as eligible for graduate credit in electrical engineering). These undergraduate units can count toward a master's degree only if a grade of B or better is earned.

Students are required to enroll in the Joint B.S./M.S. Program between February of the junior year and December of the senior year. The GRE examination is waived, but students must satisfy all other admission requirements. Students in this program will receive a BSEE degree after satisfying the standard undergraduate degree requirements, Completion of 10 or more units toward the M.S. degree will satisfy the Professional Development requirement of the BSEE program. Students who do not complete the Joint B.S./M.S. Program within six years of entering the University will automatically be transferred to the regular MSEE program. It should be noted that although six years is the maximal time frame for the Joint B.S./M.S. Program, full-time students enrolling in February of their junior year should normally complete both degrees within five years.

## Electrical Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) (operated jointly with the Department of Computer Engineering) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Communications and Microwave Laboratory* provides a full range of modern measurement capability from 0–22 GHz, including a number of automatic network analyzers and modern spectrum analyzers. It also has extensive computer-aided design and simulation capability, based largely on modern commercial software running on workstations. Interconnection of hardware measurements and computer simulation is stressed.

The *Digital Systems Laboratory* (operated jointly with the Computer Engineering Department) provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Electron Devices Laboratory* is dedicated to teaching and research topics on electronic devices, materials, and their manufacturing technologists. The laboratory has a class-100, clean-room facility which provides hands-on experiences of fabrication and characterizations of basics electronic devices. Current research topics include Impact of Process Variations on the Analysis and Optimization of VSLI Circuits, and Modeling MOS Devices including Quantum Mechanical Interface Charge Distribution Effects.

The *Intelligent Control Laboratory* provides an experimental environment for students in the area of control and system engineering. It includes a computer-controlled IBM robotic arm system, several servo-experimenters, and a torsional mechanical control system. The equipment provides students with a wide range of qualitative and quantitative experiments for learning the utility and versatility of feedback in computer-controlled systems.

The *Microelectronics Laboratory* provides teaching and research facilities for semiconductor devices and integrated circuit design, and characterization. Ongoing research topics include silicon heterostructures, thin dielectrics, high frequency devices and circuit parameter extraction, and compact modeling of transistors for large-scale circuit simulation.

The *Multimedia Education Laboratory* (operated jointly with the Department of Computer Engineering) is dedicated to the development and delivery of multimedia educational resources and to the development of tools to create and present these resources. The laboratory is equipped with eight UNIX workstations with high-speed ATM networking.

The *Robotics Systems Laboratory* is an interdisciplinary laboratory specializing in the design, control, and teleoperation of highly capable robotics systems for scientific discovery, technology validation, and engineering education. Laboratory students develop and operate systems that include spacecraft, underwater robots, aircraft, and land rovers. These projects serve as ideal test beds for learning and conducting

research in mechatronic system design, guidance and navigation, command and control systems, and human-machine interfaces.

The *Scanning Electron Microscope* (SEM) Laboratory has two Hitachi Instruments Inc. SEMs with Energy Dispersive X-ray Analysis capability, and is equipped with Noran Instruments Inc. X-ray Analysis as well as Semicaps Inc. Image Enhancement software tools. The SEMs are used for teaching and research in the areas of characterization of integrated circuits, metals, plastics, and biological specimens.

The *Signal and Image Processing Laboratory* is used primarily for graduate research. It is equipped with networked workstations, multimedia PCs, and real-time DSP systems. Research areas include theoretical issues in image processing, image analysis, three-dimensional modeling from two-dimensional data, adaptive signal processing, artificial neural networks, and nonlinear signal processing. Applications include medical image analysis, two- and three-dimensional image reconstruction, passive navigation for robotic vision, and VLSI implementations of adaptive signal processing.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. The laboratory is orienting its activities towards storage interfaces and networked storage systems. Technical advances in disk drive technology are tracked and analyzed in terms of emerging applications opportunities. Symposia and workshops on data storage technology are undertaken, and documents of historical interest are produced for the general use of the storage industry. Our head/media disk drive spin stand experimental facility has been relocated nearby off-campus and is available for hardware studies.

## LOWER-DIVISION COURSES

### *21. Introduction to Logic Design*

Boolean functions and their minimization. Designing combinational circuits, adders, multipliers, multiplexers, decoders. Noise margin, propagation delay. Bussing. Memory elements: latches and flip-flops; timing: setup and hold time; registers; counters. Implementation in standard cells, programmable logic, PLD, and FPGA. Use of industry quality CAD tools for schematic capture and HDL in conjunction with FPGAs. (Also listed as COEN 21.) *Co-requisite: ELEN 21L.* (4 units)

### *21L. Logic Design Lab*

Laboratory for ELEN 21. (Also listed as COEN 21L.) *Co-requisite: ELEN 21.* (1 unit)

### *33. Introduction to Digital Signal Processing Systems*

Overview of processor architectures for general purpose processors, signal processing microprocessors, and FPGA implementations of DSP; data representation in fixed point, floating point, m law and A law; instruction sets; assembly and machine language programming; real-time audio data acquisition and output; introduction to sample data systems. Analog to digital converters and digital to analog converters. *Prerequisite: ELEN 21.* (5 units)

### *50. Electric Circuits I*

Physical basis and mathematical models of circuit components and energy sources. Circuit theorems and methods of analysis are applied to DC and AC circuits. Laboratory. *Prerequisite: PHYS 33.* (5 units)

## UPPER-DIVISION COURSES

### *100. Electric Circuits II*

Continuation of ELEN 50, including sinusoidal steady state and phasors, transformers, three-phase circuits, resonance, Laplace analysis, transfer functions. Fourier series. Laboratory. *Prerequisite: AMTH 106 and either ELEN 50 or PHYS 70.* (5 units)

### *104. Electromagnetics I*

Static electric and magnetic fields and their sources and effects, including potential theory and the laws of Coulomb, Lorentz, Faraday, and Gauss. Introduction to vector analysis and differential operators. Dielectric and magnetic materials, capacitance and inductance, energy in magnetic and electric fields, solutions to the Poisson equation. *Prerequisites: PHYS 33 and ELEN 50; corequisite: ELEN 100.* (5 units)

### *105. Electromagnetics II*

Time harmonic electromagnetic fields. Introduction to complex vector operations. Maxwell's equations and the laws of Faraday and Gauss. Conservation of charge and power, Poynting vectors. Helmholtz wave equation, wave propagation. Boundary conditions and wave reflection and propagation, Snell's law. Transmission line theory, introduction to the Smith chart. Waveguides and radiation. *Prerequisite: ELEN 104 or PHYS 111.* (5 units)

### *110. Linear Systems*

Signals and system modeling. Laplace transform. Transfer function. Convolution. Discrete systems and Z-transform. Frequency analysis. Fourier series and transform. Filtering. Problem sessions. *Prerequisite: ELEN 100.* (5 units)

### *112. Modern Network Synthesis and Design*

Approximation, synthesis of passive one-port and two-port networks, linear operational amplifiers and active R-C synthesis. Nonlinear operational amplifiers: phase-locked loops, waveform generation. Design project. *Prerequisite: ELEN 110.* (5 units)

### *115. Electronic Circuits I*

Study of basic principles of operation, terminal characteristics, and equivalent circuit models for diodes and transistors. Analysis and design of diode circuits, transistor amplifiers, and inverter circuits. (Undergraduate Core) *Prerequisite: ELEN 50.* (5 units)

### *116. Electronic Circuits II*

Design and analysis of multi-stage BJT CMOS analog amplifiers. Study of differential amplifiers, current mirrors and gain stages. Frequency response of cascaded amplifiers and gain-bandwidth considerations. Concepts of feedback, stability and frequency compensation. Design of output stages and power amplifiers. *Prerequisite: ELEN 115.* (5 units)

### *117. Electronic Circuits III*

Design and analysis of BJT and MOSFET analog ICs. Study of analog circuits such as comparators, sample/hold amplifiers, continuous time switched capacitor filters. Architecture and design of analog to digital and digital to analog converters. Reference and biasing circuits. Study of noise and distortion in analog ICs. *Prerequisite: ELEN 116.* (5 units)

### *118. Fundamentals of Computer-Aided Circuit Simulation*

Introduction to algorithms and principles used in circuit simulation packages (such as SPICE). Formulation of equations for linear and nonlinear circuits. Detailed study of the three different types of circuit analysis (AC, DC, and transient). Discussion of computational aspects, including sparse matrices, Newton's method, numerical integration, and parallel computing. Applications to electronic circuits, active filters, and CMOS digital circuits. The course includes a number of design projects in which simulation software is written in MATLAB and verified using SPICE. *Prerequisites: ELEN 21, 100, and 115.* (5 units)

### *119. Current Topics in Electrical Engineering*

Subjects of current interest. May be taken more than once if topics differ. (4 units)

### *123. Mechatronics*

Technologies involved in mechatronics (Intelligent Electro-Mechanical Systems) and application to mechatronics systems design. Interfacing embedded systems to control a mechanical design. Electronics A/D, D/A converters, op-amps, filters, power devices, software program design, event-driven programming, DC motors, solenoids, and sensors. (Also listed as MECH 143.) *Prerequisite: ELEN 115.* (4 units)

### *127. Advanced Logic Design*

Contemporary design of finite-state machines as system controllers using MSI, PLDs, or FPGA devices. Minimization techniques, performance analysis, and modular system design. HDL simulation and synthesis. (Also listed as COEN 127.) *Prerequisite: ELEN 21; co-requisites: ELEN 127L and ELEN 115.* (4 units)

### *127L. Advanced Logic Design Lab*

Laboratory for ELEN 127. Design, construction, and testing of controllers from verbal specs. Use of CAD design tools. (Also listed as COEN 127L.) *Co-requisite: ELEN 127.* (1 unit)

### *130. Control Systems*

Applications of control systems in a variety of fields. Principal of feedback. Performance specifications: Transient and steady-state response. Stability. Design of Control systems by frequency and root-locus methods. Computer-controlled Systems. State-variable feedback design. *Prerequisite: ELEN 110.* (5 units)

### *131. Introduction to Robotics*

Overview of robotics: control, AI, and computer vision. Components and structure of robots. Kinematics and dynamics of robot manipulators. Servo-control design, PID control. Trajectory planning, obstacle avoidance. Sensing and vision. Robot intelligence and task planning. Laboratory. *Prerequisite: ELEN 110.* (5 units)

### *133. Digital Signal Processing*

Description of discrete signals and systems. Difference equations. Convolution summation. Z-transform, transfer function, system response, stability. Digital filter design and implementation. Introduction to C language implementations. Frequency domain analysis. Discrete Fourier transform and FFT. Laboratory for real-time processing. *Prerequisite: ELEN 110.* (5 units)

### *134. Audio and Video Signal Processing*

Advanced Fast Fourier transform (FFT) algorithms and applications. Fast convolution. Advanced design and analysis of digital filters. Applications of DSP in telecommunications, wireless communications, speech processing, image processing, audio and video (multimedia processing). Hands-on laboratory for real-time DSP applications using the TMS320C30 DSP processor, MATLAB, etc. Laboratory. *Prerequisite: ELEN 133; knowledge of ELEN 141 is a plus.* (5 units)

### *139. Special Topics in Signals and Systems*

Subjects of current interest. May be taken more than once if topics differ. (4 units)

### *141. Communication Systems*

Signal description; Fourier transforms; filtering; noise description; linear, exponential, and pulse modulation and demodulation. Amplitude and frequency Modulation, phase lock loops. Laboratory. *Prerequisite: ELEN 110 and AMTH 108.* (5 units)

### *143. Introduction to Wireless Communication*

Introduction to mobile and cellular systems; analog and digital modulation methods, FDMA, TDMA, CDMA, and their use in current and next generation mobile phone standards; propagation models, interference, and multipath; extensions to narrowband and broadband wireless networks. Laboratory. *Prerequisites: ELEN 110 and AMTH 108.* (5 units)

### *144. RF and Microwave Components*

Passive and active electrical components used in radio frequency and microwave circuits. Emphasis on fundamental characterization of components. Parasitics, models, and measurements. Resistors, inductors, capacitors, transmission lines, diodes, transistors. *Prerequisite: ELEN 105.* (5 units)

### *151. Semiconductor Devices I*

Materials properties, crystal structure, and band structure of semiconductors. Carrier statistics and transport; p-n junction statics, I-V characteristics, equivalent circuits, and switching response. Metal-semiconductor contacts, Schottky diodes. MOS field-effect transistors, bipolar junction transistors. Laboratory. (Undergraduate Core) *Prerequisite: ELEN 104.* (5 units)

### *152. Electron Devices and Technology*

Continuation of MOS field-effect transistors, bipolar junction transistors, heterjunctions. Principals of Silicon IC Fabrication processes and design. Bulk and expitaxial crystal growth, thermal oxidation, diffusion, ion implantation. Process simulation for basic devices. *Prerequisite: ELEN 151 or ELEN 270.* (5 units)

### *153. Digital Integrated Circuit Design*

Introduction to VLSI design and methodology. Analysis of CMOS integrated circuits. Circuit modeling and performance evaluation supported by simulation (SPICE). Ratioed, switch, and dynamic logic families; combinational and sequential circuits. Fully-custom and semi-custom design. Physical design: placement and routing. Use of state-of-the-art CAD tools. *Prerequisites: ELEN/COEN 21 and ELEN 115.* (5 units)

### *154. Integrated Circuit Fabrication and Characterization*

Principles and practice of IC fabrication and characterization of basic semiconductor devices with experiments on oxidation, diffusion, ion implantation, lithography, etching and cleaning, metallization, film deposition, process simulation, process integration, and parameter extraction. Conducted in the Microelectronics Laboratory clean-room facility. Course consists of two hours of lecture and two 3-hour labs per week. Must be continued with ELEN 155. *Prerequisite: ELEN 152.* (3 units)

### *155. Integrated Circuit Fabrication and Characterization II*

Continuation of ELEN 154. Includes writing of technical reports on experience performed in ELEN 154. *Prerequisite: ELEN 154.* (2 units)

### *180. Introduction to Information Storage*

Storage techniques and mass storage devices. Use of memory in computer systems. Design of semiconductor, magnetic and optical (disk drives), and magnetic tape memories. Storage controllers, computer interfaces, system software interfaces. Emphasis on current mass storage devices and interfaces: SCSI, IPI, ST506, ESDI. (Also listed as COEN 180.) *Prerequisites: ELEN 21, 33, and COEN 8 or 44. ELEN 122 recommended.* (4 units)

### *188. Co-op Education*

Practical experience in a planned program designed to give students work experience related to their academic field of study and career objectives. Satisfactory completion of the assignment includes preparation of a summary report on co-op activities. P/NP grading. May be taken twice. May not be taken for graduate credit. (2 units)

### *189. Co-op Technical Report*

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op advisor required. Letter grades based on content and presentation quality of report. May be taken twice. May not be taken for graduate credit. (2 units)

### *194. Design Project I*

Specification of an engineering project, selected with the mutual agreement of the student and the project advisor. Complete initial design with sufficient detail to estimate the effectiveness of the project. Initial draft of the project report. *Co-requisite: ENGL 182.* (2 units)

### *195. Design Project II*

Continued design, construction, and testing of the project, system, or device. Second draft of project report. *Prerequisite: ELEN 194.* (2 units)

### *196. Design Project III*

Continued design, construction, and testing of the project, system, or device. Formal public presentation of results. Final report. *Prerequisite: ELEN 195.* (2 units)

### *199. Independent Study*

Open to department scholars only. (1–5 units)

## GENERAL ENGINEERING

*Dean:* Daniel A. Pitt
*Associate Dean for Graduate Programs and Research:* Nam Ling
*Associate Dean for Undergraduate Programs:* Steven C. Chiesa

The Office of the Dean in the School of Engineering is responsible for administering the Bachelor of Science in General Engineering program, the general engineering minor program, the Engineering Design Center, and a number of general interest engineering courses. Students interested in learning more about the general engineering programs should contact the Associate Dean for Undergraduate Programs in the School of Engineering.

## REQUIREMENTS FOR THE GENERAL ENGINEERING MAJOR

The general engineering program has been designed to provide students with a less specialized, more technical degree option. In addition to the University Core Curriculum requirements, students in this program must complete a specified set of core engineering courses. This set of general engineering core courses is supplemented with electives selected in consultation with an academic advisor. The program allows students to pursue an engineering degree while also preparing for graduate study in law, medicine, engineering, or computer science. Students must formally declare their desire to complete the general engineering program before reaching junior status. The program leads to a B.S. degree in Engineering.

## GENERAL ENGINEERING

Students must fulfill the following school and major requirements for a *Bachelor of Science in Engineering:*

| **Humanities and Social Sciences** | **Units** |
|---|---|
| University Core requirements | 37 |
| ENGL 182, or an approved equivalent | 2–4 |
| **Mathematics and Science** | |
| MATH 11, 12, 13, 21, 22 (or AMTH 106), and one upper-division math elective | 24 |
| CHEM 11 | 5 |
| PHYS 31, 32, 32L, 33, 33L | 14 |
| MECH 15 | 5 |
| **Engineering** | |
| ENGR 1 | 1 |
| CENG 41, 43 | 9 |
| COEN 8, 21, 21L | 10 |
| ELEN 50, 115 | 10 |
| MECH 10, 11, 121 | 14 |
| **One of the following design sequences: 6–12** | |
| a. COEN 194, 195, and 196 | |
| b. ELEN 194, 195, and 196 | |
| c. CENG 192A and 193 | |
| d. MECH 194, 195, 196 | |
| **Electives** (including at least 36 upper-division units) | 52 |
| **Total** | (min) 189 |

Students in the General Engineering program should work closely with a faculty advisor in the selection of their elective coursework. In particular, such planning should ensure that all prerequisites are satisfied before the aforementioned required design sequence is started.

## Minor in General Engineering

Students must fulfill the following requirements for a minor in *General Engineering.* Please note that many of the courses listed have one or more math, science, and/or engineering course prerequisites.

1. An Approved Computing Course (COEN 11, COEN 44, CENG 15, or equivalent)
2. CENG 41
3. ELEN 50
4. MECH 10
5. MECH 121
6. Any two courses selected from: CENG 10, CENG 43, COEN 21/21L (or ELEN 21/21L), MECH 11, MECH 15, and MECH 140
7. One of the following two-course sequences: CENG 115 and CENG 118, CENG 121 and CENG 143, COEN 70 and any upper-division COEN course, ELEN 100 and ELEN 110, MECH 122 and MECH 132, MECH 123 and MECH 131

## UNDERGRADUATE COURSES

The following general engineering courses are interdisciplinary in nature and are offered primarily to satisfy certain University Core Curriculum and/or minor program requirements.

### *1. Introduction to Engineering*

Introduction to the different engineering disciplines. An overview of the types of projects in which each discipline participates. Interdisciplinary aspects of engineering. Engineering professionalism and ethics. (1 unit)

### *15. Environmental Quality Engineering*

Behavior of chemicals in the environment. Environmental protection strategies. Environmental impact assessment. Risk analysis and economic considerations. Discussion of local, regional, and global environmental problems and alternative solutions. For non-engineering majors. *Prerequisite: MATH 6 or equivalent.* (4 units)

### *19. Ethics in Technology*

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues arising in science and technology. Topics may include ethical dilemmas in the engineering, biology, chemistry, pharmaceutical, computer, military, energy, environmental, and agricultural disciplines. (4 units)

### *20. Topics in Robotics*

Participate in a project-based, hands-on engineering project in a team-based environment. Gain exposure to sensing, actuation, and control techniques and components in the process of developing a robotic system or subsystem. *Prerequisite: Instructor permission required.* (1 unit)

### *101. Professional Issues in Engineering*

Current issues in engineering professionalism and ethics. Responsibilities of the practicing engineer in addressing the impact of existing and developing technologies on society. *Prerequisite: Junior status.* (1 unit)

### *180. Marine Operations*

Introduction to the design, operation, deployment, piloting, and safety issue involving the use of underwater robots. *Prerequisite: Instructor permission required.* (1 unit)

### *181. Advanced Marine Operations*

Technical operation, maintenance, and advanced piloting of underwater robots. Crew management. Operational and safety procecdures. *Prerequisite: Instructor permission required.* (1 unit)

### *190. Directed Research*

Investigation of an approved engineering problem and preparation of a suitable project report. Conferences with faculty advisor are required. *Prerequisite: Instructor approval.* (1–4 units)

### *199. Independent Study*

Registration for this course is based on arrangements with a faculty member. (1–5 units)

## DEPARTMENT OF MECHANICAL ENGINEERING

*Professors Emeriti:* Eugene J. Fisher, R. Ian Murray, Richard K. Pefley
*Professors:* Mark D. Ardema, Michel A. Saad, Terry E. Shoup
*Associate Professors:* Timothy K. Hight *(Chair)*, Lee E. Hornberger
*Assistant Professors:* Drazen Fabris, Lilia A. Sanchez
*Research Assistant Professor:* Christopher Kitts

Mechanical engineering includes all aspects of design, development, control, and manufacture of mechanical systems and energy conversion systems. Mechanical engineering is essential to the proper design and manufacture of nearly every physical product in our modern world. As such, mechanical engineers are a fundamental resource for most industries, and work in interdisciplinary environments. Mechanical engineers must have the ability to see broad perspectives across disciplines and industries, and yet solve very local and specialized problems. The undergraduate curriculum addresses the education and training of mechanical engineering students and concentrates on two technical areas: (1) design and analysis of thermofluid systems for effective use of energy; and (2) design, analysis, and control of mechanical systems including the study of materials used in engineering. Educational efforts are channeled to expand the skills of prospective engineers not only in understanding fundamentals but also in developing competence in analyzing engineering systems.

## MECHANICAL ENGINEERING

Students must fulfill the following requirements for a *Bachelor of Science in Mechanical Engineering:*

| **Humanities and Social Sciences** | **Units** |
|---|---|
| University Core requirements | 37 |
| **Mathematics and Science** | |
| MATH 11, 12, 13, 21, AMTH 106 (or MATH 22), 118 | 24 |
| CHEM 11 | 5 |
| PHYS 31, 32, 32L, 33, 33L | 14 |
| MECH 15 | 5 |
| Math/Science Elective | 4 |
| **Engineering** | |
| ENGR 1 | 1 |
| CENG 41, 43 | 9 |
| COEN 44 | 5 |
| ELEN 50 | 5 |
| MECH 10, 11, 114, 115, 121, 122, 123, 131, 140, 141, 142, 160, 194, 195, 196 | 67 |
| **Technical Electives** | |
| Two are required; one may be 4 units of co-op or 4 units of graduate classes | 8 |
| **Electives** | 8 |
| **Total** | (min) 192 |

## Combined B.S./M.S. Program in Mechanical Engineering

Under the combined B.S./M.S. program, a full-time student can earn both the B.S. and the M.S. degree in mechanical engineering within five years. Candidates for the program are exempt from the Graduate Record Exam (GRE) but must apply for admittance to the graduate school using the normal procedures. Application to the program must be made during either the winter or spring quarters of the junior year. Accepted students begin taking graduate classes their senior year.

Students accepted into the B.S./M.S. program must satisfy all requirements for the B.S. and M.S. degrees, including the M.S. thesis. Successful students will be awarded the B.S. degree after four years and the M.S. at the end of the five-year program.

## Mechanical Engineering Laboratories

The *CAM and Prototyping Lab* consists of two machine shops and a prototyping area. One machine shop is dedicated for student use for design and research projects. The second is a teaching lab used for undergraduate and graduate instruction. Both are equipped with modern machine tools, such as lathes and milling machines. The teaching lab also houses both 2-axis and 3-axis Computer Numerically Controlled (CNC) vertical milling machines. Current CAM software is available for ease of programming. The prototyping area is equipped with a Stratasys FDM 3000 rapid prototyping system that utilizes fused deposition modeling to create plastic prototypes from CAD generated models. Also available are a Cyberware laser scanner and a Microscribe touch scanner for capturing 3D data points to facilitate reverse engineering or data acquisition from existing components.

The *Engine Lab* contains a variety of internal combustion engines installed on dynamometer stands that can be used for studies of diesel and spark-ignition engines. The facilities include a chassis dynamometer and instrumentation for evaluating engine performance, measuring exhaust gas emissions, and measuring noise. Studies can be conducted using a variety of fuels.

The *Fluid Dynamics/Thermal Science Lab* contains equipment to illustrate the principles of fluid flow and heat transfer, and to familiarize students with hydraulic machines, refrigeration cycles, and their instrumentation. The lab also contains a subsonic wind tunnel equipped with an axial flow fan with adjustable pitch blades to study aerodynamics. Research tools include modern non-intrusive flow measurement systems.

The *Instrumentation Lab* contains six computer stations equipped with state-of-the-art, PC-based data acquisition hardware and software systems. A variety of transducers and test experiments for making mechanical, thermal, and fluid measurements are part of this lab.

In the *Materials and Manufacturing Lab*, students are exposed to a variety of materials characterization and manufacturing equipment. Manufacturing processes covered are aluminum sand casting, composite laminate manufacture, plastic casting, vacuum forming, and injection molding. Materials test equipment includes tensile, impact, and hardness testers, differential thermal analyzers, and a scanning electron microscope.

The *Mechanical Engineering Laboratories* contain facilities for instruction and research in the fields of manufacturing, materials science, fluid mechanics, thermodynamics, heat and mass transfer, combustion, instrumentation, vibration and control systems, optics and holography, and design for extreme environments.

The *Photo Optics and Holography Laboratory* is equipped with a vibration-isolated optical table, He-Ne laser, various optical components, and a darkroom for processing of photographic emulsions. Investigations include small displacements of a rigid body using double-exposure holographic interferometry and the use of the holographic interferometric technique in the area of nondestructive evaluation.

In the *Plastics Recycling Lab*, faculty and students design, manufacture, and test products made from plastic waste. The laboratory is fully equipped to manufacture plastic parts from waste.

The *Robotic Systems Laboratory* is an interdisciplinary laboratory specializing in the design, control, and teleoperation of highly capable robotic systems for scientific discovery, technology validation, and engineering education. Laboratory students develop and operate systems that include spacecraft, underwater robots, aircraft, and land rovers. These projects serve as ideal testbeds for learning and conducting research in mechatronic system design, guidance and navigation, command and control systems, and human-machine interfaces.

The *Vibrations and Control Systems Lab* is equipped with two flexible test systems. One is capable of single or multi DOF modes, free or forced motion, and adjustable damping. The other is an inverted pendulum. Both systems can be controlled by a wide variety of control algorithms and are fully computer connected for data acquisition and control.

## LOWER-DIVISION COURSES

### *10. Graphical Communication in Design*

Introduction to the design process and graphical communications tools used by engineers. Documentation of design through freehand sketching and engineering drawings. Basic descriptive geometry. Computer-aided design as a design tool. Conceptual design of individual projects presented in poster format. Computer Laboratory. (5 units)

### *11. Materials and Manufacturing Processes*

Properties of common metals, alloys, and plastics. Manufacturing processes and their use in the production of mechanical components from metals and plastics. Laboratory. *Prerequisite: MECH 10.* (5 units)

### *15. Introduction to Material Science*

Physical basis of the electrical, mechanical, and thermal behavior of solids. Relations between atomic structure and physical properties. Laboratory. *Prerequisites: MECH 11, CHEM 11, PHYS 33, and CENG 41.* (5 units)

## UPPER-DIVISION COURSES

### *114. Machine Design I*

Analysis and design of mechanical systems for safe operation. Stress and deflection analysis. Failure theories for static loading and fatigue failure criteria. Team design projects begun. Formal conceptual design reports required. *Prerequisites: MECH 15, CENG 41, and CENG 43.* (4 units)

### *115. Machine Design II*

Continuation of MECH 114. Treatment of basic machine elements (e.g., bolts, springs, gears, bearings). Design and analysis of machine elements for static and fatigue loading. Team design projects completed. Design prototypes and formal final report required. *Prerequisite: MECH 114.* (4 units)

### *121. Thermodynamics I*

Definitions of work, heat, and energy. First and second laws of Thermodynamics. Properties of pure substances. Application to fixed mass systems and control volumes. Irreversibility and availability. *Prerequisite: PHYS 33.* (4 units)

### *122. Fluid Mechanics I*

Fluid properties and definitions. Fluid statics, forces on submerged surfaces, manometry. Streamlines and the description of flow fields. Euler's and Bernoulli's equations. Mass, momentum, and energy analysis with a control volume. Laminar and turbulent flows. Losses in pipes and ducts. Dimensional analysis and similitude. Laboratory. *Co-requisite: MECH 140.* (5 units)

### *123. Heat Transfer*

Introduction to the concepts of conduction, convection, and radiation heat transfer. Application of these concepts to engineering problems. Laboratory. *Prerequisites: MECH 121 and 122.* (5 units)

### *131. Thermodynamics II*

Thermodynamic potentials and availability concepts. Thermodynamic cycles. Nonreactive mixtures. Reactive mixtures with emphasis on the thermodynamics of combustion and chemical equilibrium. Laboratory. *Prerequisite: MECH 121.* (5 units)

### *132. Fluid Mechanics II*

Introduction to gas dynamics. Concepts of lift and drag. Mechanics of laminar and turbulent flow. Introduction to boundary-layer theory. Application to selected topics in lubrication theory, aerodynamics, turbomachinery, and pipe networks. Offered every other year. *Prerequisites: MECH 121 and 122.* (4 units)

### *140. Dynamic Systems I*

Newtonian dynamics of rigid bodies. Kinematics of points and reference frames. Motion relative to noninertial frames. Linear and angular momentum. Newton's laws of motion. Moments and products of inertia. Work and energy methods. Impulse and momentum. *Prerequisites: PHYS 31, CENG 41, AMTH 106, and MECH 10.* (4 units)

### *141. Dynamic Systems II*

Fixed-axis rotation, gyroscopic motion. Modeling of physical systems. Fundamental characteristics of linear systems via analysis of simple electrical and mechanical models. Response of linear systems to various inputs. Mechanical vibrations. Laboratory. *Prerequisite: MECH 140.* (5 units)

### *142. Dynamic Systems III*

Analysis of linear feedback control systems by classical methods. Synthesis and design of control systems that satisfy certain stability and time-response criteria. Graphical design methods. Introduction to analysis and design by state-space methods. Laboratory. *Prerequisite: MECH 141.* (5 units)

### *143. Mechatronics*

Technologies involved in mechatronics (Intelligent Electro-Mechanical Systems) and application to mechatronics systems design. Interfacing embedded systems to control a mechanical design. Electronics, A/D and D/A converters, op-amps, filters, power devices, software program design, event-driven programming, DC motors, solenoids, and sensors. *Prerequisite: ELEN 50.* (5 units)

### *145. Introduction to Aerospace Engineering*

Basic design and analysis of atmospheric flight vehicles. Principles of aerodynamics, propulsion, structures and materials, flight dynamics, stability and control, mission analysis, and performance estimation. Introduction to orbital dynamics. Offered every other year. *Prerequisites: MECH 122, and 140. Co-requisite: MECH 121.* (4 units)

### *146. Mechanism Design*

Kinematic analysis and synthesis of planar mechanisms. Graphical synthesis of linkages and cams. Graphical and analytical techniques for the displacement, velocity, and acceleration analysis of mechanisms. Computer-aided design of mechanisms. Three or four individual mechanism design projects. *Prerequisite: junior standing in mechanical engineering.* (4 units)

### *151. Finite Element Theory and Applications*

Basic introduction to finite elements; direct and variational basis for the governing equations; elements and interpolating functions. Applications to general field problems—elasticity, fluid mechanics, and heat transfer. Extensive use of software packages. Offered every other year. *Prerequisites: COEN 44 or equivalent and AMTH 106.* (4 units)

### *160. Modern Instrumentation for Engineers*

Introduction to engineering instrumentation, computer data acquisition hardware and software, sampling theory, statistics, and error analysis. Laboratory work spans the disciplines of mechanical engineering: dynamics, fluids, heat transfer, controls, with an emphasis on report writing and experimental design. *Prerequisite: MECH 123.* (4 units)

### *184. Introduction to Biomechanics*

Overview of basic human anatomy, physiology, and anthropometry. Applications of mechanical engineering to the analysis of human motion, function, and injury. Review of issues related to designing devices for use in, or around, the human body including safety, biocompatibility, ethics, and FDA regulations. May be taken for graduate credit. Offered every other year. *Prerequisite: Junior standing.* (4 units)

### *188. Co-op Education*

Practical experience in a planned program designed to give students work experience related to their academic field of study and career objectives. Satisfactory completion of the assignment includes preparation of a summary report on co-op activities. P/NP grading. May be taken for graduate credit. (2 units)

### *189. Co-op Technical Report*

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op advisor required. Letter grades based on content and presentation quality of report. May be taken twice. May be taken for graduate credit. (2 units)

### *190. Independent Study*

Investigation of a mechanical engineering problem and presentation of the results. Arrangement with a faculty advisor is required. *Prerequisite: Senior standing.* (2–4 units)

### *194. Advanced Design I: Tools*

Design tools basic to all aspects of mechanical engineering, including design methodology, computer-design tools, CAD, finite element method, simulation, CAM/robotics, engineering economics, and decision making. Senior design projects begun. Elements of technical writing. *Prerequisite: MECH 115.* (4 units)

### *195. Advanced Design II: Implementation*

Implementation of design strategy. Detail design and fabrication of senior design projects. Quality control, testing and evaluation, standards and specifications, and human factors. *Prerequisite: MECH 194.* (4 units)

### *196. Advanced Design III: Completion and Evaluation*

Design projects completed, assembled, tested, evaluated, and judged with opportunities for detailed re-evaluation by the designers. Elements of technical writing. Formal public presentation of results. Final written report required. *Prerequisite: MECH 195.* (4 units)

### *199. Directed Research*

Investigation of an engineering problem and writing an acceptable thesis. Conferences as required. *Prerequisite: Senior standing.* (2–4 units)

## COOPERATIVE EDUCATION PROGRAM

*Coordinator:* Enzie Lagattuta

The Cooperative Education Program integrates classroom work with practical industrial experience. The optional program provides alternate or parallel periods of college education with periods of training in industry and government. The industrial training is related to the field of study in which the student is engaged and often is diversified to afford a wide range of experience. The objective of the program is to provide students the opportunity, through this interaction of study and work experience, to enhance their academic knowledge, to further their personal and work experience, and to learn about working with people.

The program is open to both undergraduate and graduate students. To qualify for the program, graduate students must have completed at least 30 quarter units and maintain a 3.0 or higher GPA at the University. Undergraduate students must have completed at least 90 quarter units and maintain a 2.5 or higher GPA. Interested students should contact the Assistant Director for Experiential Education in the Career Center early in their academic program.

Participating students pay tuition for 1 or 2 units. Co-op credit can be used as free elective credit in meeting undergraduate degree requirements.

# 6

# Teacher Preparation at Santa Clara

Santa Clara University is accredited by the California Commission on Teacher Credentialing to offer professional preparation for prospective elementary school and junior and senior high school teachers. Santa Clara offers a subject matter preparation program for students planning to be elementary preteachers and subject matter preparation program for secondary preteachers in the areas of English, mathematics, science, and social science. The Department of Education in the Division of Counseling Psychology and Education offers graduate programs for the Multiple-Subject Credential (elementary grades) and the Single-Subject Credential (secondary grades), both with a CLAD (Cross-Cultural Language and Academic Development) emphasis. The basic teaching credential can be completed in conjunction with the four-year baccalaureate program or as a fifth year of graduate study.

## UNDERGRADUATE PREPARATION FOR TEACHING CAREERS

### Preparation for Multiple-Subject Credential

Students interested in a career in elementary school teaching should fulfill the requirements of the liberal studies major in the College of Arts and Sciences. For specific course requirements, see Liberal Studies in this bulletin or contact the Liberal Studies program coordinator, Eleanor Willemsen. The liberal studies major is approved by the California Commission on Teacher Credentialing as satisfying subject matter competency for the multiple-subject teaching credential through December 31, 2003. Application for approval under the State's new standards is in process. Students who have not completed a state-approved program must satisfy the subject matter competency component for the multiple-subject credential by passing the California Subject Examination for Teachers (CSET).

### Preparation for Single-Subject Credential

Students interested in a career in secondary school teaching in a particular subject should fulfill the requirements of one of the single-subject matter preparation programs at Santa Clara that have been approved by the California Commission on Teacher Credentialing to satisfy subject matter competency for the single-subject credential. Santa Clara offers subject matter preparation programs in English, mathematics, science with a concentration in biology, science with a concentration in chemistry, science with a concentration in physics, and social science. For specific course requirements, see the section on preparation for admission to teaching credential programs in the appropriate subject degree of this bulletin or contact the Subject Matter Preparation Program coordinator for the appropriate department. Students

who do not complete a state-approved program or who wish to teach in a subject area for which Santa Clara does not offer an approved-single-subject preparation program must satisfy the subject matter competency component for the single-subject credential by passing the subject examinations in the subject area they desire to teach.

California teaching credentials are available in the following subject areas: agriculture, art, business, English, health science, home economics, industrial and technology education, mathematics, modern languages, music, physical education, science, and social science.

### Minimum Requirements for Multiple- and Single-Subject Credentials

The minimum requirements for each teaching credential include (1) a baccalaureate or higher degree in a subject area (not in professional education) from an accredited institution; (2) passage of the California Basic Educational Skills Test (CBEST); (3) completion of an approved program of professional education, including student teaching or internship; (4) completion of a state approved subject matter preparation program or passage of a subject-area competency examination in the area one plans to teach; and (5) demonstrated knowledge of the various methods of teaching reading by completion of course work or passage of an approved examination.

## FOUR-YEAR CREDENTIAL PROGRAM

The Multiple-Subject or Single-Subject Credential Program can be completed at Santa Clara in conjunction with the student's undergraduate program in two ways. Students who complete all the University and major requirements by the end of their junior year are eligible to apply for entrance to the Teacher Education Program during their senior year. Upon graduation from Santa Clara after four years of study, these students obtain a *Preliminary Teaching Credential.* An additional 45 quarter units of graduate study in an approved program must be completed within five years to obtain a *Professional Cleared Teaching Credential.* A second option for undergraduate preteaching students is to apply to the Summer Credential program in Education during the winter of their junior year. Students then complete the course work for the Multiple-Subject or Single-Subject Credential program in two summers between their junior and senior year and the summer after graduation. Students then complete the directed teaching portion of the credential (student teaching) through a paid internship in the fall, after they complete their undergraduate degree and summer credential course work. Upon completion of the internship year, these students obtain a *Cleared Teaching Credential.* If the student has also completed a course in health education (e.g. EDUC 70), a course in teaching children with exceptional needs in the regular classroom (e.g., EDUC 138 or EDUC 323), approved course work in computer education, and course work or an examination on the provisions and principles of the U.S. Constitution (e.g., HIST 7, 8, 170, or POLI 1), they qualify for a *Professional Cleared Teaching Credential.* Otherwise these additional requirements must be completed within five years of receiving the preliminary credential. Undergraduate students at Santa Clara receive a reduced tuition rate for credential courses of $100 off the per-unit fee. Any 200 or 300 level courses taken for the credential are not counted towards the student's undergraduate unit requirement

of 175 units. For additional information on four-year credential options, contact the Department of Education in the graduate programs of the Division of Counseling Psychology and Education at Santa Clara.

### Policies

1. Graduate courses taken prior to completing the B.A./B.S. do not count toward the satisfaction of the requirements for a master's degree.
2. Units earned in excess of those required by Santa Clara for the B.S. or B.A. degree may be counted toward the satisfaction of state-approved teaching credential programs.

## FIFTH-YEAR CREDENTIAL PROGRAM

The Multiple-Subject or Single-Subject Credential Program can be completed as a fifth year of study following the baccalaureate and qualifies the student for a *Professional Cleared Teaching Credential.* This 47-quarter-unit program includes graduate course work in educational foundations, curriculum design, teaching methods, and supervised student teaching. A field experience internship option may be done in lieu of a regular two-quarter student teaching assignment. The selection of teacher credential candidates for internships is conducted by the participating school districts and in collaboration with the University. Students admitted to a credential program may choose the two-summer credential option to do their primary course work in conjunction with the field experience internship option. For admission requirements or further information, consult the *Counseling Psychology and Education Graduate Programs* bulletin available through the Department of Education.

## EASTSIDE FUTURE TEACHERS PROJECT (EFTP)

Begun in 1995, EFTP is a program developed to attract Eastside Union High School District high school students into the teaching profession. It is hoped that EFTP will increase the number of underrepresented students who choose teaching as a career. Six students are chosen each year to join the program, which provides special mentoring, course work, and practical experience related to teaching. Santa Clara University is committed to providing the selected students with these opportunities, along with a five-year scholarship of $8,000 per year during their undergraduate and fifth-year credential program. For additional information, contact EFTP in the Arts and Sciences Liberal Studies Program.

## URBAN EDUCATION MINOR

Any student interested in teaching can complete a minor in urban education offered through the Liberal Studies Program. See the bulletin section on minors for requirements.

## COURSE DESCRIPTIONS

Santa Clara University offers the following preteaching courses for undergraduates that are enrolled in subject matter preparation programs or any student considering a career in education.

### *70. Community Health Education*

Seminar addresses current health issues, reviews a variety of health education instructional materials, and includes group activities to enhance knowledge of health issues. Designed to clear multiple- and single-subject basic teaching credentials. (4 units)

### *106. Urban Education and Multiculturalism*

This course will survey some of the historical, cultural, economic, educational, moral, and political forces which confront urban educators with a view toward understanding the impact of these forces on teaching and learning. Students in this course will be exposed to academic and community resources. They will be given an opportunity to become active members of an urban community, study theories of urban practice, and reflect on both. This course is designed for undergraduates who have sophomore standing or higher and are considering a career in teaching or a related field. Requires Arrupe placement.

### *134. Psychology of Education*

Psychological principles on which effective classroom practices can be based. Human growth and development, learning theory and practice, motivation and management, effective instruction, and evaluation. Development of psychological case studies as part of the field experience. Open to sophomores. (5 units)

### *138. The Exceptional Child*

Introduction to childhood mental retardation, learning disabilities, behavior disorders, communication (speech and language) disorders, hearing impairments, physical and health impairments, severe handicaps, and the gifted and talented. The impact of these differences compared to normal development. Visits to institutions that serve these children. Particularly applicable for students interested in careers in social work, rehabilitation, education, medicine, psychology, counseling, and parenting. (5 units)

### *163. Introduction to Teaching in a Multicultural Society*

Exposure to the diversity of cultures present in U.S. public schools. Alternative instructional approaches and learning styles. Discussion of issues such as bilingual/bicultural education, cross-cultural/intercultural communication, and multicultural curriculum in conjunction with field experiences in local public schools. Requires Arrupe placement. Open to sophomores, juniors, and seniors. (5 units)

### *198A. Elementary School Teaching: Practicum and Social Foundations of Education*

### *198B. Secondary School Teaching: Practicum and Social Foundations of Education*

Requires 32 hours volunteer work as teacher aides in elementary and secondary classrooms. Seminars and directed readings address field-related problems and issues, classroom dynamics, and curriculum. Examination of the philosophical, legal, historical, and social foundations of education. Students will develop a philosophy of education. Offered each quarter. (5 units)

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# Interdisciplinary Minors and Other Programs of Study

## AEROSPACE STUDIES

*Professor:* Lieutenant Colonel Richard E. Werling *(Chair)*
*Assistant Professors:* Major Parley Ipson, Captain Donald Bush

Santa Clara University has entered into an agreement with San Jose State University that permits Santa Clara students to enroll in a program leading to a commission as a second lieutenant in the U.S. Air Force. Academic instruction includes Air Force organization, history, officer skills, leadership and management, and national security policy and issues. For those who qualify, Air Force ROTC scholarships, which can pay for tuition, books and supplies, laboratory fees, and an allowance of $250/$300/$350/$400 per month.

The Air Force Reserve Officer Training Program (AFROTC) at San Jose State University offers a high-quality educational experience structured for all college students. Students find out firsthand about Air Force scholarships and career opportunities.

Air Force ROTC classes are located at San Jose State University. Classes begin at San Jose State University in August, for the fall semester. Those wishing detailed information on enrollment and scholarships should contact the Aerospace Studies Department at San Jose State University at 408-924-2960.

### LOWER-DIVISION COURSES

***1A, B. Foundations of the U.S. Air Force***

Today's Air Force officer and how he/she fits into the Air Force as a whole. Role of the officer as a professional, job information, Air Force installations, history, and basic communication. Year course. (1 unit per semester)

***2A, B. Evolution of USAF Air and Space Power***

Development of air power from balloons and dirigibles through the jet age. Employment of air power from peacetime relief missions and civic action programs through the post-Vietnam era. Year course. (1 unit per semester)

## UPPER-DIVISION COURSES

### *131A, B. Air Force Management and Leadership*

### *131A. Communicative Skills at the Junior-Officer Level and Management Principles*

### *131B. Executive Functions and Problem-Solving Tools, Practices, and Controls*

Differing styles of leadership. Year course. *Prerequisites: AS 1A, B; AS 2A, B; or as determined by department chair.* (3 units per semester)

### *141A. National Security Policy Process*

Role of the Air Force as an instrument of U.S. national security and the relationships with various governmental institutions. Global perspective to include regional studies of Russia, Asia, Central and South America, Middle East, and Africa. *Prerequisite or co-requisite: AS 131B.* (3 units)

### *141B. Preparation for Active Duty*

Examination of advanced leadership ethics and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, and preparation for active duty. *Prerequisite or co-requisite: AS 141A.* (3 units)

### *180. Individual Studies*

Application of theory and instruction in field and staff exercises. By arrangement. (3 units)

### *Leadership Laboratory*

Dynamic environment where cadets develop leadership and management skills by planning, organizing, directing, and coordinating exercises. Mandatory 2 hours per week for officer candidates.

## ASIAN STUDIES

*Director:* Gregory Corning

The Asian Studies Program offers an interdisciplinary minor open to students from any undergraduate school or college in the University. The minor is designed to provide a "do-able" introduction to the cultures and languages of Asia and to serve as a valuable complement to major fields of study. Courses in several disciplines enable students to sample different dimensions of Asian culture as well as focus on a specific area of interest.

## REQUIREMENTS FOR THE MINOR

### Culture Courses

Two lower-division courses and four upper-division courses (maximum of two from a student's major and three in any one department) selected from the list of approved courses. Check the Asian Studies Web site for changes in the courses offered each year: http://www.scu.edu/academic/programs/asianstudies.

### Language Courses

Completion of the third course of the first-year, college-level sequence in an Asian language (Japanese and Chinese are offered on campus) or demonstration of an equivalent level of proficiency by passing a language proficiency examination supervised by the Department of Modern Languages and Literatures. Non-native speakers of English may satisfy this requirement by presenting professionally recognized documentation of proficiency in an Asian language.

### Field Project

Student-designed project that involves interaction with an Asian language community, either through International Programs or within an Asian-American community in the Bay Area. Some courses will help facilitate such projects, or students can register for the field project course. The ASP director can help students design projects that suit their interests and means, either locally or abroad.

The Asian Studies Program strongly urges its students to spend a summer, quarter, or year in one of the many University-approved International Programs. The International Programs Office currently offers study programs of varying duration and expense in China, Japan, Southeast Asia, and India.

## ASIAN STUDIES COURSES

*Note: Not all courses are offered every year. Students who have declared an Asian Studies minor may pursue a field project in courses designated by an asterisk (*).*

***195. Field Project****

***199. Directed Reading/ Directed Research****

## DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

### Art History

160. Arts of Asia

### Ethnic Studies

Some courses in Asian-American topics will fulfill the minor; consult the program director.

### History

50. Introduction to East Asian Studies
51. Introduction to Chinese Civilization
52. Introduction to Japanese Civilization
54. Introduction to South Asia
55. Introduction to Southeast Asia
56. Wives, Mothers, and Goddesses: Women in Indian Literature
57. Rajas and Sultans in Medieval India
58. Modern India*
146A. Medieval and Early Modern Japan
146B. Modern Japan
147A. Premodern China
147B. Modern China
148. U.S.-Japan Relations
150. Women in East Asia*
151. Imperialism in East Asia
154A. Ancient and Classical India*
154B. State, Religion, and Gender in Medieval India*
154C. Colonial India*
155. Women in South Asia
156. Imperialism in South and Southeast Asia
157. Art and Religion of India
159. Special Topics in Asian History*
194. Seminar in South Asian History*
195. Seminar in East Asian History*
199. Directed Reading*

## Modern Languages and Literatures

CHIN 1–3. Elementary Chinese I, II, III
CHIN 21–23. Intermediate Chinese I, II, III
CHIN 100–2. Advanced Chinese I, II, III
JAPN 1–3. Elementary Japanese I, II, III*
JAPN 21–3. Intermediate Japanese I, II, III
JAPN 100–2. Advanced Japanese I, II, III
JAPN 113–5. Readings in Japanese I, II, III
JAPN 125. Colloquium: Japanese Literature and Culture
JAPN 140. Modern Japanese Literature in Translation
JAPN 150. Postwar Japanese Literature in Translation
JAPN 182. Japanese Women's Literature in Translation
JAPN 198. Directed Study*
JAPN 199. Directed Reading

## Political Science

2. Introduction to Comparative Politics (with Asia focus)
122. Far Eastern International Relations
123. Japanese Foreign Policy
135. Asian Political Economy
139. Religion and Politics in the Third World*
147. Politics in Japan
148. Politics in China*
199. Directed Reading*

## Religious Studies†

RSOC 7. South Asian Traditions
RSOC 10. Asian Traditions
TESP 52. Zen Spirituality
RSOC 82. Shia Islam*
RSOC 85. Hinduism*
RSOC 86. Buddhism*
RSOC 88. Chinese Religions*
RSOC 89. Japanese Religions*
RSOC 120. The Bhagavad Gita
RSOC 153. Zen in Time and Thought
RSOC 162. Asian Religions in the Bay Area*
TESP 180. Basic Buddhist Concepts
RSOC 185. Sex and Gender in Chinese Religion*
RSOC 187. Ethical Issues in Asian Culture*
RSOC 199. Directed Reading and Research*

† Asian Studies minors may be able to pre-register for certain courses in Asian religions; consult the program director.

## BIOTECHNOLOGY

*Director:* Craig Stephens

Biotechnology is revolutionizing the practice of medicine and agriculture and is having an impact on fields as diverse as human reproduction, forensics, manufacturing, and pollution control. The biotechnology minor is designed for students interested in gaining insight into the scientific background of biotechnology, exploring its potential for the future, and obtaining practical experience in laboratory techniques used in biotechnology research and its applications. This course of study is most useful for students contemplating careers in the biotechnology industry and students who plan to pursue advanced degrees in related areas such as molecular biology, cell biology, or biochemistry. The minor will be most easily completed by students majoring in biology, combined sciences, or chemistry; other majors should consult with their advisors and begin the course of study as early as possible in order to complete the requirements in a timely manner. A total of 12 courses is required for the minor, at least seven of which have laboratory components.

In addition to coursework, students are required to complete a research internship at a biotechnology company or at a research institute or academic laboratory focusing on an area relevant to biotechnology (i.e. cell biology, molecular biology, biochemistry, genetics, or microbiology). Internships must be approved in advance by the director. Minimum length is 10 weeks of full-time work, or 400 hours total time if done on a part-time basis. Students must prepare a written report on the project upon completion, to be evaluated by the director.

Completion of the minor is noted on the student's official transcript, and all students will also receive a certificate noting their accomplishment.

### REQUIREMENTS FOR THE MINOR

Students must complete the following course requirements:

1. *Scientific Foundations of Biotechnology* (eight courses): BIOL 21 (Introduction to Physiology), BIOL 24 (Cell Biology/Genetics), BIOL 25 (Investigations in Molecular Biology), CHEM 11 (General Chemistry I), CHEM 12 (General Chemistry II), CHEM 35 (Organic Chemistry I), CHEM 36 (Organic Chemistry II), and BIOL 175 (Molecular Biology)
2. *Ethical Issues* (one course): BIOL 171 (Ethical Issues in Genetics and Biotechnology)
3. *Advanced Laboratory Skills* (one course): BIOL 176 (Recombinant DNA) or BIOL 177 (Gene Expression and Protein Purification) or CHEM 143 (Biochemical Techniques)
4. *Contemporary Topics in Biotechnology and related fields* (one course): BIOL 189 (Topics in Cell and Molecular Biology)
5. *Choose one elective course from the following* (one course): BIOL 110 (Genetics), BIOL 113 (General Microbiology), BIOL 174 (Cell Biology), or CHEM 141 (Biochemistry)

## CATHOLIC STUDIES

*Director:* Paul J. Fitzgerald, S.J.

The Catholic studies minor offers students from all departments a cross-disciplinary program for the study of the intellectual tradition of Catholic faith. The minor is designed for (1) intensive study of Catholicism as a faith, (2) critical retrieval of the Catholic intellectual tradition through dialogue with contemporary thought, and (3) pursuit of the intersection between faith and culture in the arts and humanities, as well as in the social and natural sciences. Catholic studies minors are assigned a faculty mentor who will personally guide them throughout the program. The program is also distinctive in that the course of study is not limited to the offerings of the Religious Studies Department. In conjunction with the Bannan Center for Jesuit Education, the Catholic Studies program sponsors intellectual, cultural, social, and religious opportunities for both students and faculty.

### REQUIREMENTS FOR THE MINOR

#### Foundational Courses

Students complete three foundational courses, two in Catholic theology from offerings in the Religious Studies Department (from 1 to 99). The foundational requirement is completed by successfully passing an approved course in the Western Culture series.

#### Faith and Culture Courses

Students then ordinarily complete: (1) one specialized course in Catholic history, (2) one course in Catholic literature, (3) a specialized course in philosophy or an upper-division course in theology, and (4) two approved electives in the study of Catholic culture.

#### The Colloquium

During sophomore, junior, and senior years, students may participate in a 2-unit interdisciplinary colloquium, "Catholic Imagination," which meets in the spring quarter of each year for the discussion of topics in theology, literature, film, the arts, politics, and culture. Guest lecturers and artists present their work. The colloquium is open to all Santa Clara students, but first priority is given to Catholic Studies minors. Special opportunities for lectures, concerts, retreats, and social outreach are offered to Catholic Studies minors throughout the year.

An updated list of program-related courses is published each quarter in the University Course Schedule.

## COMMUNITY STUDIES

*Director:* Eleanor Willemsen

The Community Studies Program emerges out of the University's goal to educate future leaders who can define not only "what is" but also "what should be." The goal of the minor that the program offers is to provide a critical intellectual component to students' experience of the problems, issues, and challenges facing various constituencies in the local community. The minor focuses on the local Santa Clara County/South Bay area; it is also attentive to the national and international aspects of some of these problems and issues.

The program is distinguished by linking a multidisciplinary approach with a community-based pedagogy. A fundamental principle of the program is that students must bring together insights from the relevant disciplines to analyze a specific problem, such as aging, poverty, homelessness, health care, the working poor, illiteracy, child abuse, immigration, the welfare system, domestic violence, or women in poverty. At the center of the individual student's "plan of study" will be direct experience with community members and agencies, along with appropriate course work and a Capstone research project, which is to be a contribution to the agency's program based on firm academic foundations. Students considering a minor in Community Studies should contact the Liberal Studies Program Office.

### REQUIREMENTS FOR THE MINOR

1. Introduction to Community Studies (LBST/COST 50)
2. Community Health (EDUC 70)
3. One course from ANTH 3, ECON 5, POLI 1, PSYC 1, PSYC 2, SOCI 1
4. One course from PHIL 5, 6, 7, 8, 9, 110, 113, POLI 30, TESP 45, 46, 155
5. Two upper-division courses from different disciplines related to the chosen area of focus
6. An internship (100 hours) from an identified program related to the chosen area of focus
7. Senior Capstone research project (COST 196)

## CREATIVE WRITING

*Director:* Claudia Mon Pere McIsaac

The Creative Writing Program at Santa Clara offers students a coherent course of study in poetry, fiction, and creative nonfiction. The creative writing minor is firmly grounded within the liberal arts tradition, integrating courses in poetry, fiction, drama, and creative nonfiction writing within their broader literary and cultural context. Carefully designed sets of courses enable students to develop their craft in one or more of these areas. Introductory courses familiarize them with the theory and practice of the genre. Intermediate craft courses focus on specific models, using literary examples to explore several craft issues, such as line, form, or narrative voice. In advanced courses students write and critique one another's work in a particular

genre. All students are required to take a literature course (in English, Classics, or Modern Languages) to familiarize themselves with the tradition in which they are working.

Each student works with the director or an advisor from the Creative Writing Program to coordinate a specific course of study. Upper-division students may also pursue advanced work in dramatic writing, writing in a second language, or literary biography by working individually with program faculty in theater, classics, modern languages, or history.

## REQUIREMENTS FOR THE MINOR

### Literature (5 units)

One upper-division course in English, Classics, or Modern Languages

### Introductory Creative Writing (8 units)

ENGL 71. Fiction Writing and
ENGL 72. Poetry Writing

### Practicum (2 units)

ENGL 90. Literary Review Practicum and
ENGL 190. Literary Review Practicum

### Craft (5 units)

ENGL 126. The Craft of Poetry or
ENGL 127. The Craft of Fiction

### Workshop (5 units)

171. Advanced Fiction Writing or
172. Advanced Poetry Writing

### Electives (10 units)

Choose two from the following group:
ENGL 126. The Craft of Poetry
ENGL 127. The Craft of Fiction
ENGL 171. Advanced Fiction Writing
ENGL 172. Advanced Poetry Writing
ENGL 173. Screenwriting
ENGL 174. Advanced Nonfiction Writing
ENGL 181. Writing for Publication
ENGL 196. Community Projects in Creative Writing
THTR 170. Play Writing

## ETHNIC STUDIES

*Professors:* Stephen S. Fugita (Psychology/Ethnic Studies), Francisco Jiménez *(Director)* (Modern Languages and Literatures/Ethnic Studies)
*Associate Professor:* Ramón D. Chacón (History/Ethnic Studies)
*Assistant Professors:* Bridget C. Cooks (Art and Art History/Ethnic Studies), Shawn A. Ginwright (Sociology/Ethnic Studies), James Lai (Political Science/Ethnic Studies)
*Fay Boyle Professor:* Francisco Jiménez
*Distinguished Professor of Psychology and Ethnic Studies:* Stephen S. Fugita

The Ethnic Studies Program is a University program designed for all undergraduates who are interested in studying and understanding the historical and contemporary experiences of historically underrepresented racial/ethnic groups in the United States. The program offers interdisciplinary courses based primarily on the scholarship within the academic discipline of ethnic studies. The focus of the Ethnic Studies Program is on African Americans, Asian/Pacific Islander Americans, Chicanas/Chicanos, and Native Americans in the United States.

The program also coordinates University-wide events to promote a critical analysis of the experiences and issues dealing with historically underrepresented racial/ethnic groups in our society. It organizes such activities in order to provide the University and surrounding communities with a better understanding of the societal significance and impact of race/ethnicity and their relationship with other critical factors, particularly gender and social class.

The ethnic studies minor complements a student's major by broadening his/her field of study to include an academic focus on race/ethnicity. It enhances a student's employment opportunities in business, education, law, medicine, social work, and government. The minor provides a foundation for graduate studies for students who plan to become university professors and researchers with a specialization in ethnic studies.

### REQUIREMENTS FOR THE MINOR

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete seven ethnic studies courses with an average grade of C or higher. The required courses are divided into three sections:

1. Students must complete three lower-division courses from the following subject areas: African American Studies, Asian American Studies, Chicana/Chicano Studies, and Native American Studies. Students must take ETHN 5 and two from the following to fulfill this requirement: ETHN 10, 20, 30, or 40.
2. Students must complete three upper-division courses in an area of specialization (i.e., African American Studies, Asian American Studies, Chicana/Chicano Studies, or Comparative Ethnic Studies). Two of the three upper-division courses must be taught by members of the Ethnic Studies Core Faculty.

3. Students must complete ETHN 199, a Capstone project representing the culmination of a student's course of specialization in ethnic studies. It must be taken during the senior year. ETHN 199 consists of a directed reading/ research project or internship supervised by a faculty member (core or affiliated faculty) in the Ethnic Studies Program. This course must be taken for a minimum of 2 quarter units and must be approved by the director of the program prior to registration.

Completion of the ethnic studies minor is noted on a student's transcript. A certificate is given to students completing the minor.

## LOWER-DIVISION COURSES

### *5. Introduction to the Study of Race and Ethnicity in the United States*

This course focuses on immigration and intercultural race relations for the major cultures of color in the United States: African American, Asian American, Latina/o, and Native American. We will discuss each group historically in relationship to each other and the dominant culture. Through critical readings, class discussion, and film, students will have opportunities to develop a solid intercultural foundation to understanding race and cultural diversity in United States. In addition, this course creates a basis for classes offered by all faculty in the Ethnic Studies Program particularly the introductory level courses. The course also serves as an introduction to the minor in the Ethinc Studies Program. (4 units)

### *10. Introduction to Native American Studies*

A multidisciplinary course addressing key issues regarding identity and definition among indigenous peoples in the United States. How members of each group view themselves; how they are defined by others; how interactions between the different cultures influence one another. (4 units)

### *20. Introduction to Chicana/ Chicano Studies*

A survey course in Chicana/Chicano studies addressing key issues in Chicana/o communities in the United States. Focuses on such issues as immigration, culture, family, family and kinship, identity, gender roles, religion, education, politics, and labor force participation. (4 units)

### *30. Introduction to African American Studies*

Multidisciplinary survey of African American culture. African cultural heritage and African survivals. World views and values, religious beliefs, family and kinship, language. Contemporary community issues of identity, sex roles and stereotyping, housing, employment, and education. (4 units)

### *31. Introduction to African American Art*

Also listed as ARTH 46. For course description see ARTH 46. (4 units)

### *40. Introduction to Asian American Studies*

Multidisciplinary survey of Asian Americans. Asian cultural heritage, immigration, and the formation of Asian American communities. World views and values, religious beliefs, family and kinship, language. Contemporary community issues of identity, sex roles, stereotyping, employment, and education. (4 units)

### *50. Introduction to Filipino American Studies*

Course will address mainstream representations of the Filipino American community. Students will read 20th-century works written by and about Filipino Americans, with an emphasis on four relevant themes: the legacy of Spanish Colonialism and American Imperialism; U.S. politics and the history of Filipino American activism and resistance; problems of identity as it relates to class, gender/sexuality, mixed heritages, and generational differences; and Filipino Americans and popular culture. (4 units)

### *55. Cross-Racial Electoral Politics*

This survey course will examine the historical and contemporary political movements among the major minority groups in the United States since the 1960s. The origins and goals of the Black Power movement, the Chicano/a movement, the Asian American movement, and the Native American movement will be focused on during the quarter. Each of these movements embodies similar and different trails with regard to their respective group's quest for political power and elected representation. Due to contemporary immigration trends, Latinos and Asian Americans have challenged the Black-White paradigm that has traditionally defined U.S. racial politics in local and state level politics. The result, in some instances, has been interracial competition and conflict at these levels. The necessary elements needed to build and to sustain multiracial coalitions along with what the political future holds for these minority groups will be addressed. (4 units)

### *96. Race, Class, and Culture Through Film*

Using film as a medium, the course will examine the issues of race, class, and culture as they relate to four racial minority groups: African Americans, Native Americans, Chicanos, and Asian Americans. The themes of race, class, and culture are viewed both historically and contemporarily. (4 units)

## UPPER-DIVISION COURSES

### *112. Native Peoples of the United States and Mexico*

Examination of the national policies, ideologies, and attitudes that have shaped the lives of indigenous peoples living along the U.S.-Mexico border. Issues include cultural survival, cultural change, national and individual identity, gender relations, legal and political problems, and intercultural relations. (5 units)

### *120. Mexican Immigration to the United States*

Examination of the process of Mexican immigration to the Unites States since 1910 with a focus on the role of Mexican immigrant labor in California agribusiness. An analysis of reasons for Mexican immigration and the responses of the United States to such immigration. Special focus on Mexican farm laborers, the various movements to organize them, and on Cesar Chavez and the UFW. (5 units)

### *121. Chicana/Chicano Families and Gender Roles*

An examination of Chicana/Chicano families in the United States. Addresses two general areas in family research: (1) the historical development of Mexican immigrant families and subsequent generations of communities and families of Mexican Americans, and (2) a life-cycle analysis of families with a specialized focus on gender roles and relations. (5 units)

### *122. Chicana/Chicano Communities*

An examination of the development of the social, cultural, political, and economic structures that shape Chicana/Chicano communities in the United States. Themes include the evolution of barrios, the historical and contemporary impact of Mexican land grants, ghettoization, education, gangs, employment, and the political economy. (5 units)

### *125. Latinas/os in the United States*

The course examines the experience of Latinas/os in the United States by focusing on people of Mexican, Central American (El Savador, Guatemala, and Nicaragua), and Caribbean (Puerto Rico, Cuba, and the Dominican Republic) descent. The countries of origin, immigration, settlement patterns, comparative issues, and the condition of Latinas/os in the United States will be explained. Course content addresses both historical and contemporary issues. (5 units)

### *133. Educating African American Children and Youth*

An examination of educational issues concerning African American children and youth. Issues of race, class, and gender are explored in various educational contexts. The history of education in America as it relates to African American children will be explored, as well as controversial explanations of low academic achievement for African American students. (5 units)

### *134. Black Social Movements*

An examination of the historical and contemporary issues concerning African American involvement in North American social movements. Focuses on an overview of the major questions, dominant theoretical perspectives, and empirical studies related to Black social movements, such as Black nationalism, the Civil Rights movement, and the Black Power movement. (5 units)

### *135. African American Women in the Visual Arts*

Also listed as ARTH 135. For course description see ARTH 135. (5 units)

### *136. African Americans and Photography*

Also listed as ARTH 148. For course description see ARTH 148. (5 units)

### *140. Japanese Americans and the Concentration Camps*

An examination of the political, social, and economic conditions that led to the World War II incarceration of Japanese Americans, their experiences in the camps, and the long-term impact of the internment on Japanese Americans and their communities. (5 units)

### *141. Asian American Women*

An examination of Asian American women from a historical and contemporary framework within U.S. society. Focuses on the struggle for identity and adjustment in the first generation and the conflicts with subsequent generations of Asian American women. Analyzes two major themes: (1) the interplay of gender identity formation and conflict, both in the family and in the paid labor force, and (2) the development of individual and collective survival strategies. (5 units)

### *142. Asian American Communities*

An examination of selected topics affecting Asian Americans in the United States. Issues include the changing nature of communities, community institutions, anti-Asian violence, occupational glass ceilings, higher education, political mobilization, gender relations, identity formation, and the new patterns of Asian immigration. (5 units)

### *150. Racial/Ethnic Writers in Comparative Perspective*

An examination of the expression of race and ethnicity in the writings of African Americans, Asian Americans, Native Americans, and Chicanas/os. Themes include the racial/ethnic/gender/class representation of self, identity, culture, and community in U.S. society. Focus on the interrelationship between literature and literary criticism and the sociohistorical context within which it is produced. (5 units)

### *155. Racism in the United States*

Multidisciplinary study of racism in the United States. Its historical manifestations from the arrival of Europeans in North America to contemporary times; its psychological dimensions (prejudice, stereotypes, discrimination); and its place in the U.S. political economy. Emphasis on African Americans, but includes discussion of Native Americans, Chicanos/as, and Asian Americans. (5 units)

### *199. Directed Readings/Research or Internship*

A Capstone senior project representing a student's specialization in ethnic studies. Prerequisite: written approval by the director of the Ethnic Studies Program prior to registration. (2–10 units)

## DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

*Note: For descriptions, see the listings of the relevant departments. Students should consult with the director of the Ethnic Studies Program to determine the applicability of courses taken at other institutions or at study-abroad programs.*

### Anthropology

86. Native American Cultures
90. Cross-Cultural Study of Women
146. Perspectives on the Spanish and Native American Experience
187. Native American Cultures of the Pacific Coast

### Art History

66. African American Art
153. Chicana/Chicano Art
154. Native American Art
167. African Americans and Photography

### Communication

121. Minorities and the Media
127. Intercultural Communication

### Education

106. Urban Education and Multiculturalism
163. Introduction to Teaching in a Multicultural Society

### English

35. African American Literature
36. Chicana/Chicano Literature
37. Native American Literature
38. Asian American Literature
39. Multicultural Literature in the United States

69. Literature by Women: Third-World Women Writers in the United States
130. African American Literature
139. Dangerous Border Crossers
140. Chicana/Chicano Literature II
155. Asian American Literature II
158. Native American Literature
166. Pan-African Literature

**History**

81. Chicanas/Chicanos in the Southwest
104. African Americans and Africa
180. Native Americans of the United States

**Modern Languages**

133. Mexican American Literature

**Performance Studies**

71. Music in American Culture Communication

**Political Science**

153. Ethnic Politics

**Psychology**

119. Minority Mental Health
156. Prejudice and Discrimination

**Religious Studies**

91. Native American Religions
184. Race and Religion in the United States

**Sociology**

132. Social Stratification
150. Ethnic Enterprises
153. Race, Gender, and Class in the United States
175. Race and Inequality

**Theatre**

14. Chicana/Chicano Theatre
65. Multicultural Theatre
161. American Theatre from the Black Perspective
189. August Wilson Seminar

## GERONTOLOGY

*Director:* Patricia M. Simone

Gerontology is the study of the elderly and of the aging process. Majors from any field may enhance their credentials and their ability to work with the elderly—a fast-growing population—through the Gerontology Certificate Program. Students examine influences on the roles and quality of life of the elderly as well as physical and psychological aspects of aging. Courses investigate perceptions about the elderly in various societies and how the experiences of older people differ according to culture, ethnicity, class, and gender. Students complete a practicum that gives them experience working with the elderly. Completion of the Gerontology Certificate Program is noted on the student's transcript, and students receive a certificate acknowledging their attainment.

### REQUIREMENTS FOR CERTIFICATE

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete the following:

### LOWER-DIVISION COURSES

At least one of the following four courses: SOCI 1 (Principles of Sociology), ANTH 3 (Introduction to Social/Cultural Anthropology), PSYC 1 (General Psychology I), or PSYC 2 (General Psychology II).

### UPPER-DIVISION COURSES

BIOL 187 (Biology of Aging), a gerontology-related practicum approved by the director, and at least three of the following courses: ANTH 172 (Anthropology of Aging), POLI 168 (Special Topics in Public Policy/Politics of Aging), PSYC 188 (Adult Development Seminar), PSYC 196 (Psychology of Aging), TESP 126 (Spirituality and Aging), SOCI 172 (Management of Health Care Organizations), SOCI 176 (Elder Law), or any gerontology-related course with approval of the director.

## INFORMATION TECHNOLOGY AND SOCIETY

*Director:* James L. Koch

The Center for Science, Technology, and Society offers an interdisciplinary minor in information technology and society. The program provides students with the opportunity to develop practical skills in computing, communications and networking, or data storage/retrieval, a sensitivity to the ethical issues relating to the uses of information technology, an understanding of the impact of information technology on social communities, the knowledge of how information technology can be used in imaginative ways, and an appreciation of the ways that information technology applications contribute to the common good.

## REQUIREMENTS FOR THE MINOR

The minor requires completion of seven courses, many of which also fulfill University Core Curriculum or College or School requirements. In addition to the course requirements stipulated below, the minor requires that students attend at least four Center for Science, Technology, and Society symposia or colloquia and write brief critical summaries for a mentoring discussion and pass/no-pass evaluation by their minor advisor.

The seven courses taken in fulfillment of the minor must be chosen within the following parameters:

1. 4 courses must be from Section I below, 3 from Section II;
2. At least 4 courses must be upper-division, including at least one upper-division course each from Section I and Section II;
3. No more than 3 courses may be taken from the same department.

### Section I: Programming, Design, and Applications

*Select four courses from the following:*

ARTS 74. Basic Computer Imaging
ARTS 75. Basic Graphic Design
ARTS 174. Computer Imaging
ARTS 175. Graphic Design
ARTS 176. Advanced Computer Imaging
ARTS 177. Constructing Web Sites
ARTS 178. Advanced Graphic Design
ARTS 179. Designing Multimedia/Interactive Projects
CHEM 120. Computer Applications in Chemistry
CENG 5. Project Impacts on the Community and the Environment
COEN 1. Understanding Digital Technologies
COEN 6. Introduction to Computing
COEN 11. Introduction to Computing
COEN 12. Abstract Data Types and Data Structures
COEN 20. Introduction to Embedded Systems
COEN 44. Applied Programming
COEN 146. Computer Networks
COEN 148. Computer Graphics Systems
COEN 150. Introduction to Information Security
COEN 174. Software Engineering
COEN 176. Software Tools Design
COEN 177. Operating Systems
COEN 178. Introduction to Database Systems
COEN 179. Theory of Algorithms
ELEN 10. From the Telegraph to the Internet
MKTG 175. Electronic Commerce
MATH 10. Introduction to Computer Science
MATH 61. Data Structures
MATH 163. Theory of Algorithms

MATH 164. Computer Simulation
MATH 168. Computer Graphics
MATH 178. Cryptography
OMIS 17. Introduction to Business Computing
OMIS 30. Structured Programming
OMIS 31. Business Applications Programming
OMIS 105. Database Management
OMIS 107. Systems Programming
OMIS 111. Computer Communications Systems
OMIS 113. Data Warehousing and Data Mining
OMIS 137. Object-oriented Programming

## Section II: Human and Social Impacts and Influences of Information Technology

*Select three courses from the following:*

ANTH 151. Law and Society
ARTS 70. Art in the Computer Age
COMM 12. Technology and Communication
COMM 160A. Silicon Valley Communication Technologies
COMM 161B. Communication Media and Technology in Education
COMM 162A. Communication Technology and Policy
COMM 180A. Global Audiences
COMM 181A. Global Media Industries.
COMM 182A. Global News Issues
ECON 185. Economics of Technological Change
ENGR 10. Technology and Society
ENGR 19. Ethics in Technology
LBST 75. Technology and Learning
MATH 3. Introduction to Computing and Applications
MGMT 161. Organizational Structure and Design
OMIS 34. Management Information Systems
PHIL 117. Science, Technology, and Society
POLI 101. Technology, Nature, and Political Philosophy
POLI 130. Global Environmental Change
SOCI 49. Computers, the Internet, and Society
SOCI 149. Business, Technology, and Society
SOCI 160. Law in a Changing Society
THTR 35. Technology and Theatre

## INTERNATIONAL PROGRAMS

**http://www.scu.edu/studyabroad**

*Director:* Dennis R. Gordon
*Associate Director:* Barbara Colyar
*Program Coordinator:* Heather Browne
*Assisi Summer Program Coordinator:* Victor Vari
*Baja Spring Immersion Program Coordinators:* Elizabeth Dahlhoff, Shana Weber
*Casa de la Solidaridad Directors:* Kevin Yonkers-Talz, Trena Yonkers-Talz
*Cuba Summer Program Coordinator:* Robert Bozina
*Durham Summer Program Coordinator:* Timothy O'Keefe
*French Exchange Programs Coordinator:* Catherine Montfort
*International Business Minor Coordinator:* Martin Calkins
*International Studies Minor Coordinator:* Dennis R. Gordon
*Model United Nations Coordinator:* William Stover
*Sweden Engineering Exchange Coordinator:* Ronald Danielson
*Trinidad and Tobago Summer Program Coordinators:* Dennis R. Gordon, Janice Edgerly Rooks

International Programs provides a variety of academic programs and services to Santa Clara University and the community. Along with the programs described below, International Programs presents lectures, forums, cultural events, and other activities exploring the world from an interdisciplinary perspective.

## INTERNATIONAL BUSINESS MINOR

International Business is a University program designed to educate students in a broad range of management and international business skills and to offer an understanding of the culture, history, and politics of a selected geographic area. Students select an area of geographic specialization (Europe, East Asia, or Latin America and the Caribbean) and are assigned a faculty advisor who shares their field of interest.

International Business is open to all undergraduates in the College of Arts and Sciences and the Leavey School of Business as a supplement to their major. Program requirements include proficiency in a language of the geographic area of concentration (usually through the 101 level); a selection of courses in modern history, business ethics, political science, and contemporary culture; and a selection of courses in international economics, finance, marketing, and management.

For more information regarding the International Business Minor, please see the International Programs Web page at www.scu.edu/studyabroad or set an advising appointment with the director of the International Business Minor, Dr. Martin Calkins (Management Department).

## INTERNATIONAL STUDIES MINOR

International Studies is a University program designed for students wishing to concentrate course work beyond their majors in a multidisciplinary study of international social, economic, cultural, and political topics. The program is open to all SCU undergraduates. Students organize their courses in one of two ways: an area studies focus on Europe, Africa, or Latin America and the Caribbean; a thematic focus of their choice, such as poverty and development, diplomacy and law, or peace studies. Students must also complete two upper-division language courses in a language appropriate to their area of interest and other selected core requirements in anthropology, geography, and political science.

For more information regarding the International Studies Minor, please see the International Programs Web page at www.scu.edu/studyabroad or set an advising appointment with the director of the International Studies Minor, Dr. Dennis Gordon (International Programs/Political Science).

## STUDY ABROAD

Santa Clara provides opportunities for study throughout the world. The University operates or is affiliated with numerous programs, including sites in Africa, Latin America, Europe, and Asia. Programs are available for one semester, a full year, or summer. Study abroad offers courses of study and experiential learning in many fields, including the humanities, social sciences, natural sciences, business, and engineering. Students should begin exploring study abroad opportunities during their freshman year. With planning and forethought, programs can be arranged for most majors, and classes can count towards major, minor, CORE, and University requirements with appropriate departmental approvals.

To participate in Study Abroad during the academic year a student must be matriculated at Santa Clara University, have at least junior status (88 units), and have declared an academic major. To ensure the academic quality of the study abroad experience and transfer of credit, students normally are permitted to participate only in programs formally affiliated with Santa Clara University (for policy governing credit for units taken at other institutions, see page http://www.scu.edu/bulletin/undergraduate/regulations.cfm). Approval of the student's academic advisor and the director of International Programs is required for admission to Study Abroad programs. The Study Abroad advising sheet must be completed and signed by the appropriate academic or core curriculum advisor to guarantee credit transfer. All students wishing to transfer study abroad credit to Santa Clara must pay the Study Abroad fee, billed concurrently with the study abroad tuition and in accordance with the published rates.

Some academic majors and core requirement committees limit the number of study abroad courses which may be used to meet requirements. The Religious Studies Committee has limited the number of courses taken abroad which may be used to meet the core requirement to one. Students are advised to check with their departments to see if limits exist for the transferal of credit for majors.

For more information about study abroad options, please contact the International Programs Office, Cesar Chavez Commons, Building A, 408-554-6940. A study abroad resource library is available to browse at any time during regular business hours, and advising appointments are available.

## CASA DE LA SOLIDARIDAD

**http://www.scu.edu/casa**

Casa de la Solidaridad is an experiential learning program conducted in El Salvador. This semester-long program combines academic courses with direct experiential learning and service activities in and around San Salvador. Students live in community in the Casa, study at the University of Central America, and take part in community field placement projects for two full days per week. Offered in conjunction with the Association of Jesuit Colleges and Universities (AJCU) and the University of Central America, El Salvador (UCA).

## THE CERTIFICATE IN INTERNATIONAL LEADERSHIP

Students may earn the Certificate in International Leadership by successfully completing INTL 102 and 103 and a study abroad educational or service program.

## INTERNATIONAL PROGRAMS COURSES

### *101. Contemporary Global Issues*

Interdisciplinary focus on contemporary international social, cultural, and political topics. (2 units, P/NP only)

### *102. International Intercultural Competence*

This interdisciplinary course is designed for students preparing to study abroad and considers the personal, cultural, and practical dimensions of studying in a different society. Part of a two-course sequence leading to a certificate in International Leadership. Students must be current applicants for summer, semester, or full academic year study abroad program. (2 units, P/NP only)

### *103. Applied International Intercultural Competence*

This interdisciplinary course is designed for students recently returned from an international study abroad or service learning experience. The emphasis is on applying knowledge gained abroad for personal development and service to the community. Required for certificate in International Leadership. (2 units, P/NP only)

### *110. Salvadoran Society*

Students are introduced to "la realidad" of El Salvador through a variety of academic perspectives: Cross Cultural Psychology, Economics, History, and Human Development. In addition to module readings and assignments, each student will focus on one of the four modules and will work with the professor towards a final synthesis project in that area. Taught in El Salvador as part of the Casa de la Solidaridad program. (5 quarter units)

### *194. University of Central America Elective*

For students participating in the Casa de la Solidaridad program in El Salvador, the option to enroll in a university course or develop an independent research project. (5 quarter units)

### *197. Directed Research: Model United Nations Preparation*

Preparation for Model United Nations simulation exercise (INTL 198A). Students research United Nations' procedures, issues, and the policies of new member states. Open to all undergraduates. (1 unit)

### *198A. International Conflict Simulation: Model United Nations*

Students take part in simulated United Nations sessions, representing member-nations, debating and preparing resolutions, and engaging in other aspects of diplomacy. *Prerequisite: INTL 197.* (1 unit)

### *198B. Salvadoran Literature*

Readings and analysis of works by Salvadoran authors, reflecting the national and historical reality of the country. Special focus on literature dealing with issues such as social inequality, the role of the woman in Salvadoran society, and implications of societal violence. Taught in El Salvador as part of the Casa de la Solidaridad program. (5 quarter units)

### *199: Field Placement/Praxis*

Experiential field placement as part of the Casa de la Solidaridad program in El Salvador. Students work two full days per week in the community, and integrate this experience with academic readings, journals, social analysis, and reports. This experience serves as the springboard for academic, personal, and communal reflection, and is integrated into other course work. (5 quarter units)

## MEDIEVAL AND RENAISSANCE STUDIES

*Director:* Dorothea French

The Medieval and Renaissance studies minor offers students from all departments a cross-disciplinary and interdisciplinary program of study in Europe's Middle Ages and Renaissance. These periods lay on the edge of modernity, when the distinctive characteristics of the contemporary world began to form and when major new connections were made between Europe and Africa, the Middle East, East Asia, and the Americas. Study of these periods from many different points of view affords an opportunity to gain valuable perspectives on the ways that Medieval and Renaissance persons, events, and institutions helped to shape the modern world.

## REQUIREMENTS FOR THE MINOR

The seven courses required for the minor may be selected from over 80 courses in 13 different disciplines. (See Departmental Courses Applicable to the Minor below.)

A maximum of three courses can be lower-division (1–99). The four remaining courses must be upper-division (100–199), and must be selected from at least three different departments. One of the upper-division courses must require an interdisciplinary research paper based on source materials and secondary works dealing with a topic rooted in the Medieval and/or Renaissance periods. Alternatively, this research paper requirement may be fulfilled by enrolling in Medieval and Renaissance 199 under the supervision of an affiliated faculty member and the program director.

Study of French, German, Greek, Italian, Latin, and/or Spanish is strongly recommended but not required. Students should consult with the program director to determine the cluster of courses best suited to their personal interests and preparation. Completion of the minor is noted on the student's transcript, and students receive a certificate acknowledging their accomplishment.

## MEDIEVAL AND RENAISSANCE STUDIES COURSES

***199. Independent Study***
Directed reading and research in source materials and secondary works dealing with selected problems rooted in the Medieval and/or Renaissance periods, culminating in an interdisciplinary paper. *Prerequisite: permission of program director and instructor.*

## DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

*Note: For descriptions, see the listings of the relevant departments. In addition to the courses listed below, many departments offer occasional special topics, directed reading/directed research, and seminar courses on Medieval and Renaissance topics. Students should consult with the program director to determine the applicability of these, as well as of courses taken at other institutions or while studying abroad, to the minor.*

### Anthropology and Sociology

146. Perspectives on the Spanish and Native American Experience

### Art History

11. Western Culture: Art History I
12. Western Culture: Art History II
50. Pre-Columbian Art of Mesoamerica and the Andes
51. Colonial Art of Mexico and Peru
110. Early Christian and Byzantine Art
114. Early Medieval Art
116. Romanesque and Gothic Art
120. Early Renaissance Art
122. High Renaissance and Mannerist Art
124. Northern Art in the Renaissance Period
150. Maya Art
151. Aztec Art
153. Colonial Art of Mexico
164. Art of Islam

### Classics

112. World of Augustine
119. History of Early Christianity
135. Medieval Latin

### Economics

117. European Economic History

## English

12. Western Culture: Literature II
41. Survey of English Literature I
54. Shakespeare
113. English Drama I
116. Shakespeare's Tragedies
117. Shakespeare's Comedies
118. Shakespeare's Histories
141. Medieval Literature
142. Chaucer
143. Renaissance Literature
144. The 17th Century
145. Milton
162. Comparative Humanism
188. Senior Seminars (on Medieval and Renaissance topics)

## French and Francophone Studies

115. The Theme of Love: Survey of French Literature I
120. Moyen Age
130. Humanism and the Renaissance

## History

12. Western Civilization: Medieval and Early Modern
45. Introduction to African History and Cultures
57. Rajas and Sultans in Medieval India
61. Latin America: Indians and Conquerors
103. History of the Jesuits, 1491–1992
112. Byzantine Empire
115. Western Barbarians: 300–1100
116. Crusading Age: 1000–1450
117. State and Church in the Middle Ages: 1000–1450
118. Renaissance and Reformation: 1350–1560
119. Dynasties and Discoveries: Europe, 1560–1763
121. Interpreting the English Reformation
123A. Medieval and Early Modern Russia
125. Medieval European Women
126. Conflicts in Medieval Christianity
127. The World of St. Francis
128. History of Early Christianity
129. Special Topics in Ancient and Early Modern European History
143. Origins and Development of Islam
146A. Medieval and Early Modern Japan
147A. Premodern China
154A. Ancient and Classical India
154B. State, Religion, and Gender in Medieval India
160. Mexico: Colonial and Early National Periods
192. Seminar in Medieval or Early Modern Europe

### Honors

12. Medieval and Early Modern Culture

### Italian Studies

110. Italian Civilization I
120. Survey of Italian Literature I
130. Dante, La Divina Commedia I
131. Dante, La Divina Commedia II
140. Duecento, Trecento
150. Quattrocento, Cinquecento (Rinascimento)

### Music

170. Music History I: Antiquity Through Early Baroque

### Performance Studies

11. Performance and Culture I

### Philosophy

11. Western Culture: Philosophy I, Classical and Medieval
132. Medieval Philosophy

### Religious Studies

SCTR 126. Sufi Mysticism
TESP 12. Medieval, Renaissance Religion
TESP 143. Theology and Ethics of Thomas Aquinas
RSOC 65. Early Christianity
RSOC 66. Medieval Christianity
RSOC 167. Late Medieval Religion

### Spanish Studies

120. Major Works of Spanish Literature I
122. The Spanish Picaresque Novel
123. Siglo de Oro Drama
130. Survey of Latin American Literature I
165. Cervantes: Don Quijote

### Theatre and Dance

112. Topics in Theatre and Drama prior to 1700
122. Acting Styles III: Shakespearean
150. Social History of Fashion I
187. Seminar in Theatre and Dance before 1700

## MILITARY SCIENCE

*Professor of Military Science:* Lieutenant Colonel Michelle L. Woods *(Chair)*
*Assistant Professors:* Major Gerald L. Dwyer, Captain Charles McGuinness, Major Scott Yakoubek
*Senior Instructor:* Master Sergeant Raymond B. Trujillo

The University supports a Military Science Department with classes open to the student body as a whole and the "Bronco Battalion," an ROTC (Army Reserve Officer Training Corps) battalion of cadets from Santa Clara University, Stanford University, and San Jose State University. The program is designed to develop men's and women's management skills and leadership abilities for successful careers in both the corporate world and the military. Instruction is conducted on and off campus. All courses offered by the Military Science Department are fully accredited and applicable toward fulfilling academic requirements for graduation. Through this voluntary program, the University offers all eligible students the opportunity to obtain an officer's commission in the U.S. Army Reserve, National Guard, or active Army, while earning their college degree.

### ACADEMIC CURRICULUM

The military science core curriculum listed below consists of six lower-division classes in the ROTC Basic Course and seven upper-division courses in the ROTC Advanced Course. Cadets may take a summer course (MILS 24) in lieu of the six lower-division courses. The professional military education of ROTC cadets consists of two essential components: a baccalaureate degree from Santa Clara University (or one of the cross-enrolled universities) and at least one undergraduate course from each of five designated fields of study. Prior to commissioning, cadets must take at least one course in military history and computer literacy.

### Basic Course

***Fundamentals of Leadership and Management*** Refers to first- and second-year courses (MILS 11, 12, 13, 21, 22, and 23), which are designed for beginning students who want to qualify for entry into the Advanced Course and for those students who may want to try military science without obligations. A number of popular or challenging extracurricular activities are associated with these courses. A student can also qualify for entry in the Advanced Course by completing only the summer encampment, MILS 24 (Leadership Training Course). Outstanding students in this course may receive a two-year scholarship valued at over $34,000.

### Advanced Course

***Advanced Leadership and Management*** Consists of MILS 131, 132, 133, 134, 141, 142, and 143. This course is open to students who have completed the Basic Course or earned placement credit for it (various methods). The Advanced Course qualifies students for commissions as officers in the U.S. Army. Students must complete all courses numbered greater than MILS 130, to include MILS 134, a

six-week National Advanced Leadership Camp during the summer, in sequence, unless otherwise approved by the professor of military science. Students receive $250 to $400 per month during the school year. Students who do not desire to compete for a commission as an officer in the Army may take these courses for academic credit with approval by the professor of military science.

## LEADERSHIP LABORATORIES

Leadership laboratories, held weekly for two hours, are required for all ROTC scholarship cadets. Performance during lab periods is reflected in the student's course grade. Labs include activities such as rappelling, terrain navigation, marksmanship, drill and ceremonies, and tactical field training exercises.

### Labs and Field Exercises

During each quarter of class work, weekly lab work is required. Two off-campus exercises involving adventure training, rappelling, rifle marksmanship, leadership training, and survival skills are optional for non-scholarship Basic Course students. Two off-campus exercises for Advanced Course students are mandatory, focusing on leadership and military skills.

## FINANCIAL ASSISTANCE

### Scholarship Program

Army ROTC offers merit-based scholarships valued at over $19,000 per year. The scholarship amount is to be used toward tuition for each year the scholarship is in effect. Four-, three-, and two-year scholarships are available depending on when the student applies. Entering freshmen who bring their four-year scholarships to SCU and who meet certain academic criteria may be eligible for a financial package that will cover the remainder of tuition plus room and board for each year of the scholarship. In addition, three-year scholarship students who meet criteria may be eligible for a financial package that will cover room and board for the duration of the scholarship. Three- and two-year scholarships, available to freshman and sophomore students respectively, apply toward tuition for the remaining years on campus. A stipend of $250 per month during the school year is also part of the scholarship. Scholarship recipients are expected to maintain acceptable standards of academic achievement and personal conduct. They must continuously demonstrate leadership potential. Detailed information on the scholarship program may be obtained from the professor of military science.

### Simultaneous Membership Program

Juniors and seniors may elect to join Reserve or National Guard units as officer trainees. Cadets receive pay and allowances from both ROTC and their assigned unit while gaining essential military knowledge prior to their commissioning. Cadets participating in this program can earn more than $5,000 in two years.

## EXTRACURRICULAR ACTIVITIES

| | |
|---|---|
| *SCU Color Guard* | Precision marching unit |
| *Ranger Platoon Intensive* | Small-unit operations emphasizing survival training and tactical skills |
| *Airborne Training Army* | Parachute qualification (conducted at Fort Benning, Georgia) |
| *Air Assault Training Army* | Helicopter skills qualification (conducted at Schofield Barracks, Hawaii) |
| *Ranger Challenge* | Regional Competitive Military Sweepstakes |
| *Bataan Memorial Death March Competition* | International All-Terrain Marathon Endurance Competition |

## COMMISSIONING AS U.S. ARMY OFFICERS

Students must complete the ROTC Program to be eligible for appointment and commissioning as officers in the U.S. Army Reserve. Reserve commissions are tendered in all basic branches of the Army. A board of officers determines the branch in which students are commissioned based on their preference, leadership potential, academic background, and the needs of the service.

## COURSE DESCRIPTIONS

### Overview

The Military Science Curriculum at Santa Clara University is designed to introduce to all students those leadership skills required to organize, plan, and lead the activities of working groups in solving diverse situational problems. The goal is to ensure the graduates have the leadership training required to stand out ahead of their peers in any career field. Various theories are addressed when discussing communicative skills, leadership principles, senior leadership vision, ethics, and the role of the military in the U.S. Government. The student is challenged to evaluate, analyze, and apply problem-solving methods in all years of the program. In the final year, students are placed in leadership roles focusing synthesis of the course material while applying the concepts to new situations. The curriculum is divided into Basic Course requirements and Advanced Course requirements. To proceed to Advance Course classes, student must complete either the six required Basic Course classes or attend a summer class at Fort Knox, Kentucky. The Chair of the Military Science Department must approve exceptions to this progression.

## Basic Course

***Fundamentals of Leadership and Management*** The term Basic Course refers to first- and second-year courses (MILS 11, 12, 13, 21, 22, and 23) which are designed for beginning students who want to qualify for entry into the Advanced Course in a normal progression. The focus of the entire Basic Course is to introduce to the student key terms needed to address the leadership challenges and problem solving methods used in the Advanced Course. Additionally, in these first two years, communicative skills are taught, practiced, and mastered. This ensures that the student entering the Advanced Course is prepared to take charge of groups and organize the activities of the group in problem solving exercises or labs. A number of popular and challenging extracurricular activities are associated with these courses. These include a Leadership Reaction Course, a physically challenging Confidence Course, Rappelling, Marksmanship, and Orienteering. A student can also qualify for entry into the Advanced Course by completing the summer course, MILS 24 Leadership Training Course, at Fort Knox, Kentucky. Attendance at this course is for those in the summer before their junior or later years who have not taken the six Basic Course Requirements.

## Advanced Course

***Advanced Leadership and Management*** The Advanced Course consists of the courses MILS 131, 132, 133, 134, 141, 142, and 143. It is open to students who have completed the Basic Course or earned placement credit for it. Such placement credit can be achieved through prior military training or completing MILS 24. The Advanced Course is designed to complete the training required to produce leaders of vision for the nation. Successful completion also may qualify a student for a commission as an officer in the U.S. Army. Students must complete all courses numbered greater than MILS 130, to include MILS 134, a summer six-week National Advanced Leadership Camp at Fort Lewis, Washington, in sequence unless otherwise approved by the Professor of Military Science.

## BASIC COURSES

### Freshman

***11. Basic Leadership I: Introduction to Leading Organizations***

Examine the Army's theory of leadership through the primary field manual on leadership plus supplementary readings as assigned. Learn basic soldier skills required to be a member of an Army unit, to include land navigation (day and night), basic rifle marksmanship, rappelling, wear of the uniform, and duties of an Army squad member—the Army's smallest organization. Understand the Army's physical fitness program and how it is a key component of leading small organizations. Develop your own personal fitness program under the guidance of an Army Master Fitness Trainer. One 60-minute class per week. Three 3-hour leadership labs required. One weekend field exercise away from the University. (2 units)

### *12. Basic Leadership II: Leadership Theory*

Review Army leadership theory learned in MILS 11 and survey other leadership theories as propounded by military and business leadership theorists. Embark on a comparative leadership theory study as a starting point to developing one's own personal style, habits and practices. Study and practice the use of the Army's formal ethical decision-making process. Study and employ effective communication techniques by preparing for a series of formal military-style briefings on a variety of topics. One 60-minute class per week and three weekly 2-hour leadership lab are required. One optional off-campus weekend leadership/team-building exercise is conducted during the quarter. (2 units)

### *13. History of Military Leadership*

By reading historical accounts of military leaders, come to understand how leadership is a central factor in preparing for and winning battles. Using Army leadership theory, students will analyze how leaders succeed (or fail) in using proven leadership principles to train, prepare for, and conduct military operations. Readings will survey leaders at all levels from small Army units to large-scale organizations, and at many points in history, from classical to modern. One 60-minute class per week. Three 3-hour leadership labs required. One weekend field training exercise away from the University. (2 units)

## Sophomore

### *21. Basic Leadership III: Leadership in Practice*

This course will lay the groundwork for your success as leaders in organizations of any type. The course work is organized in support of a pedagogical model that prescribes viewing the leadership process from the perspective of the individual, both as a group member and leader. It focuses attention on the requirements and constraints of the group and the organization and insures consideration of situational factors. Studies are focused on organizational leadership as opposed to the broad spectrum of ideas related to leadership in general. One 60-minute class per week. Five 3-hour labs per quarter. One weekend field training exercise away from the University. (2 units)

### *22. Battle Analysis*

Using modern problem-solving techniques, learn to analyze military battles with the intent of understanding the reasons for success or failure of both leaders and units in the battles. Develop an understanding of the principles of war, the role played by formal tactics in battle, the role of weapons systems and their improvements, and the role of leaders. Battles may include examples from the classical period, the American Civil War, World War II, or a modern American battle. One 60-minute class per week. Five 3-hour labs per quarter. One formal military dinner during an evening. (2 units)

### *23. Troop Leading Procedures*

Preparation for entry into ROTC Advanced Course. Focus on leadership principles, military briefing skills, basic orienteering techniques, basic rifle marksmanship, and small-unit tactics. Topics include orientation to branches of the Army, troop leading procedures, and combat orders. Teaches stress management skills and skills to build self-confidence. Two 60-minute sessions and five 3-hour leadership labs per quarter. One field training exercise away from the University. (2 units)

### *24. Leadership Training Course*

A six-week summer camp training at Fort Knox, Kentucky. Students receive pay. Travel, lodging, and the Army defrays most meal costs. The environment is rigorous and teaches skills required for success in the Army ROTC Advanced Course. No military obligation is incurred. Open only to sophomores and juniors who have not taken ROTC courses during the regular school year or for ROTC course alignment. Students must pass a physical examination (paid for by ROTC). Completion of MILS 24 qualifies a student for entry into the Advanced Course. Candidates can apply for a space anytime during the school year prior to the summer. (Pass/Fail grade only). (4 units)

## Junior

### *131. Leading Small Organizations I*

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small unit tactics and opportunities to plan and conduct training for lower-division students both to develop such skills and as vehicles for practicing leading. Three 60-minute or two 90-minute sessions in conjunction with a weekly leadership lab are required. Participation in a weekend exercise is required. (3 units)

### *132. Leading Small Organizations II*

Continues methodology of MILS 131. Analyze tasks; prepare written or oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership case studies. Examine importance of decision making in setting a positive climate that enhances team performance. Weekly, two 90-minute sessions are required. Additionally, a weekly leadership lab is required. One mandatory off-campus weekend leadership/team-building exercise is conducted during the quarter. (3 units)

### *133. Leading Small Organizations III*

Development of skills learned in MILS 132. A performance-oriented study of small-unit tactics, leadership, and the decision-making process. Emphasis is on problem solving and leadership models. Students are required to prepare and give oral presentations on military subjects; i.e., military history, current events, prepare for National Advanced Leadership Camp, etc. Three 60-minute or two 90-minute sessions in conjunction with a 2-hour weekly leadership lab are required. Participation in a weekend exercise is required. (3 units)

### *134. National Advanced Leadership Camp*

A six-week camp conducted at Ft. Lewis, Washington. Only open to (and required of) students who have completed MILS 131, 132, and 133. Students receive pay. Travel, lodging, and the Army defrays most meal costs. The Advanced Camp environment is highly structured and demanding, stressing leadership at small-unit level under varying, challenging circumstances evaluated throughout the camp. Although this course is graded on a Pass/Fail basis only, the leadership and skill evaluations at the camp weigh heavily in the subsequent selection process that determines the type commission and opportunities given to students upon graduation from ROTC and the University. (3 units)

## Senior

### *141. Leadership Capstone I: Staff Management*

Plan, conduct, and evaluate activities in the ROTC Cadet Organization. Articulate goals, activate plans and direct the group of underclassmen. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various policies and programs in this effort. Three 60-minute or two 90-minute sessions in conjunction with a weekly leadership lab are required. Participation in a weekend exercise is required. (3 units)

### *142. Leadership Capstone II: Military Ethics*

Continues methodology from MILS 141. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army Lieutenant and Community Leader. Three 60-minute classroom sessions are required. An additional weekly leadership lab is required. One mandatory off-campus weekend leadership/team-building exercise is conducted during the quarter. (3 units)

### *143. Leadership Capstone III: Transition to Lieutenant*

Continuous development of leadership and critical thinking skills. Instruction includes ethics, military justice, Army Systems, and other subjects to assist the transition to the Army Officer Corps. Cadets work as battalion-level staff officers to plan and coordinate leadership labs and field-training exercises. Three 60-minute or two 90-minute sessions in conjunction with three 2-hour weekly leadership lab are required. Participation in a weekend exercise is required. (3 units)

### *199. Women in the Military Profession*

Examine specific controversial issues in the U.S. Army under the directed study of the department director. Though most studies are directly related to the specific issues regarding Women in the Army, other aspects of this issue and other examinations of diversity in the institution can be coordinated with the Professor of Military Science. Two 90-minute sessions in conjunction with three 2-hour weekly leadership labs are required. (3 units)

# PRE-PROFESSIONAL PREPARATION

## PRE-HEALTH SCIENCES

*Advisor:* Steven L. Fedder

Santa Clara University has an excellent reputation for preparing students for careers in the health sciences. Most incoming students tend to be focused on either allopathic medicine (MD) or dentistry (DDS), but a much broader spectrum of careers can be equally or more attractive, including osteopathic medicine (DO), physical therapy, optometry, pharmacy, physician assistant, nurse practitioner, and others. The following remarks make specific reference to pre-allopathic medicine students, but are also generally relevant to the broader audience just described. Additional information may be found on the Pre-Health Web site, www.scu.edu/prehealth/, including Web addresses rich with information about all of the health specialties mentioned.

Not only is a Santa Clara University education able to provide ample opportunity to acquire the requisite natural science academic foundations required by medical schools, but also its broad liberal arts Core Curriculum serves to develop the communication, personal interaction, and analytical skills needed both during medical school and in one's subsequent medical practice. Although SCU has no "pre-med major" as such, the courses prescribed by the Council of Education of the American Medical Association can be incorporated into several academic majors. Most medical schools specifically require:

- One year of general chemistry (Chem 11, 12, and 13 at SCU)
- One year of organic chemistry (Chem 31, 32, and 33 at SCU)
- One year of biology (Bio 21, 24, and 25 at SCU)
- One year of physics (Physics 11, 12, and 13 at SCU, alternatively Physics 31, 32, and 33)
- One year of mathematics (typically calculus, such as Math 11 and 12, and a statistics course)

In addition, many students become more skilled and competitive through enrolling in two or three upper-division science courses, notably biochemistry, genetics, and human physiology. These prove very helpful in preparation for the MCAT (Medical College Admission Test). The choice of academic major is much less important than completing the coursework above, although naturally many pre-health students select a natural science major like biology, chemistry, or combined sciences. The student should major in whatever interests him or her the most, as long as the math/science background courses are taken prior to graduation.

It is important for students to maintain steady contact with the Pre-Health Advisor throughout the undergraduate years for assistance in each step of the chronology below:

- Adjustment to college academic rigor and social life;
- Appreciation of the wide array of available health care careers;
- Assistance with the balance between academics, social life, work, and health/community volunteering, internships, etc.; and
- Assistance with the timing of the MCAT (or other relevant entrance exam) and application to health science programs.

## PRE-LAW

*Director of Pre-Law Advising:* Susan Frisbie

There is no specific major or pre-law program required to qualify for law school admission. Admissions officers in the best law schools recommend undergraduate preparation in a major that requires discipline, clarity of thought, and precision in written and oral work. In addition to College, School, and major requirements, elective courses in English, history, philosophy, speech, the social sciences, and the fundamentals of accounting provide valuable training for students intending to pursue a career in law. Early in their undergraduate careers these students should consult their advisors, or one of the specially designated pre-law advisors, to formulate a program designed for their specific needs and career goals.

For further information and for the names and contact information of all current pre-law advisors, students should visit the Pre-Law Web site at www.scu.edu/prelaw/.

## PRE-TEACHING

*Director:* Eleanor Willemsen

Information on undergraduate preparation for teaching careers at the elementary or secondary level can be found in Teacher Preparation at Santa Clara University.

## RETAIL STUDIES

*Director:* Dale D. Achabal
*Associate Director of e.Business Initiatives:* Kirthi Kalyanam
*Associate Director of Research*: Stephen A. Smith
*Associate Director of Programs:* Cynthia M. Gamage

The retail studies minor, offered through the Retail Management Institute, provides students with an opportunity to explore many of the exciting and challenging Multi-Channel and e.retailing career opportunities in the industry. The program is open to all University undergraduates. The majority of the courses in the curriculum for the program are required for business majors. Arts and Sciences majors can use general University requirements and electives to fulfill many of the curriculum requirements.

Students entering the retail studies minor continue to major in their field of interest and receive their bachelor's degree in that field. The minor is comprised of a set of core courses, and either a Multi-Channel or e.retailing option based on the interests of individual students.

## CORE REQUIREMENTS

*Communication:* COMM 20 (Public Speaking), **or** equivalent
*Technology/Information Systems:* ART 70 (Art in the Computer Age); COMM 12 (Technology in Communication); OMIS 34 (Management Information Systems) or equivalent; **or** SOCI 49/149 (Business, Technology and Society)
*Microeconomics:* ECON 5 (Introduction to Economics) **or** ECON 11 (Principles of Microeconomics I)
*Statistics:* BUSN 40 (Statistics and Data Analysis I), COMM 110 (Quantitative Research Methods), PSYC 40 (Statistical Data Analysis), **or** MATH 8 (Introduction to Statistics)
*Principles of Marketing:* MKTG 181
*Multi-Channel Retailing:* MKTG 165
*Summer Internship:* MKTG 198 **or** XXXX 198
*Advanced Retail Seminars (Fall and Winter):* MKTG 168 and MKTG 169

Students may select one of the following two options:

**Multi-Channel Option**
*Business Decisions:* ACTG 11 (Information for Business Decisions 1)
*Computer Concepts:* OMIS 17 (Introduction to Business Computing), MATH 10 (Introduction to Computer Science), **or** equivalent
*Management:* MGMT 160 (Organization and Management)

**E*Retailing Option**
*Computer Imaging:* ART 34 (Basic Computer Imaging) **or** ART 134 (Computer Imaging)
*Graphic Design:* ART 36 (Basic Graphic Design) **or** ART 136 (Graphic Design)
*E*Commerce:* MKTG 175 (Electronic Commerce), ART 137 (Constructing Web Sites), OMIS 113 (Data Warehousing and Data Mining), **or** approved equivalent

Students acquire hands-on experience through a full-time, 10-week management internship with a major retail organization during the summer between their junior and senior years. The internships give students an opportunity to apply classroom theories to actual situations in a work environment, enabling them to practice and refine their leadership and managerial skills.

All students take a two-quarter Advanced Retail Seminar in the fall and winter quarters of their senior year. The seminars cover topics such as branding, product development, merchandise management, negotiation, store operations, team building, information systems, supply chain management, E*Commerce, pricing and promotion analysis. This strong business and liberal arts background prepares all students for the challenges of today's increasingly complex business world.

Nonbusiness majors are encouraged to apply for admission to the program during their freshman or sophomore year to allow time to integrate their course of study in retailing with the requirements in their major field. Business students who have completed the lower-division requirements can enter the program as late as their

junior year. To be admitted to the retail studies minor, students must complete an application that will be reviewed by the Retail Management Institute Office, 108 St. Joseph's Hall, 408-554-4960.

## UNIVERSITY HONORS PROGRAM

*Director:* Richard H. Osberg

The University Honors Program provides a learning experience appropriate to students of exceptional talent and imagination. It offers liberal education and small, seminar-style classes, especially in the University's Core requirements. The Program is organized as two distinct, but related, levels called simply Level I and Level II. Participation in each is open to undergraduate students from Arts and Sciences, Business, and Engineering. A competitive annual award permits one Level II student to spend his or her junior year at Mansfield College, Oxford University.

Level I of the Program accepts first-year students for a curriculum organized around courses that satisfy Core requirements applying to students in every field. Level I requires that participants maintain a cumulative GPA of 3.0 or higher and successfully complete a minimum of six Program courses within the first six quarters of enrollment. Most participants complete the Level I program during their first year. Unless exempted by the director, Level I participants must fulfill specific Core courses—first and second writing, first-level religious studies, and Western culture—through the special class sections arranged by the Program. Participants are also strongly urged to satisfy mathematics, ethics, social sciences, natural sciences, third writing, and advanced religious studies Core requirements with Program sections.

High school seniors interested in admission to the Program should complete the normal application process for the University and also contact the Program Office. The Program admission process considers the individual's academic record, application to the University, standardized test scores, and any other information the student might provide about interests, goals, or experiences. Those accepted minimally present a combined SAT score in the mid-1300s or above. A minimum verbal SAT of 630 is required. The high-school grade point average should reflect a correspondingly high level of achievement in university preparatory courses.

Participants in Level I normally continue to Level II, in which they complete four additional Program courses including a senior thesis or project. Students who have completed 32 or more units but not more than 88 units at Santa Clara may apply to enter Level II by contacting the Program Office. Applicants need to be prepared to submit academic records, an essay, and letters of recommendation from two members of the Santa Clara faculty. Students joining the program at Level II complete six Program courses including the thesis or senior project. Some Level II courses, while not limited to Program participants, offer academic opportunities especially suitable for them. For both continuing and new participants, the thesis usually grows out of a regular or independent study course taken in conjunction with the participant's major. Successful completion of the Program at Level II becomes part of a participant's permanent record and appears on academic transcripts issued by the University.

Interested students should write to: Director, University Honors Program, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053; 408-554-4439; Web site: www.scu.edu/honors.

## HONORS COURSES

***11. Classical Culture***

***12. Medieval and Early Modern Culture***

***13. Late Modern Culture***

A series of interdisciplinary seminars on Western culture from the ancient Greeks to the present. Enrollment normally limited to participants in the University Honors Program.

***100. Honors Seminar***

An advanced seminar usually on an interdisciplinary topic. May be repeated for credit when topic changes. Enrollment limited to students in the Honors Program.

***199. Honors Program Thesis***

Course credit for thesis or culminating project of the Honors Program.

In addition to the Western Culture sequence (HNRS 11, 12, 13), the Program offers special courses and sections through specific departments such as chemistry, English, mathematics, philosophy, psychology, and religious studies.

## URBAN EDUCATION

*Director:* Eleanor Willemsen

The urban education minor provides Santa Clara undergraduate students seeking to become K–12 teachers with the basics in educational theory, urban school observation and reflective experiences, and the sociological and psychological foundations of education. The urban education minor has two distinctive elements. First, the urban element springs from the Jesuit commitment to a preferential option for the poor and reflects the multicultural focus of SCU's basic credential programs. Societal problems, such as poverty, crime, and prejudice, challenge teachers and policymakers who struggle daily with how to strengthen the K–12 educational experience for children.

Any student can complete a minor in urban education offered through the Liberal Studies Program.

### REQUIREMENTS FOR THE MINOR

### Course Work To Be Completed (24 units)

EDUC 70. Community Health Education (4 units)
EDUC 106. Urban Education and Multiculturalism (5 units)
EDUC 138. The Exceptional Child (5 units)
EDUC 163. Introduction to Teaching in a Multicultural Society (5 units)
EDUC 198A/B. Teaching Practicum and Social Foundations (5 units)
PSYC/LBST 134. Psychology of Education (5 units)

*Note: Liberal studies majors must take an additional approved course in a related discipline.*

## PROGRAM FOR THE STUDY OF WOMEN AND GENDER

*Director:* Barbara Molony

The Program for the Study of Women and Gender is a multidisciplinary program that offers students the opportunity to study scholarship on women and gender, areas that have come to occupy an increasingly important place in many disciplines in the last quarter century. Areas of scholarly inquiry include the participation of women in social and cultural production; the construction of gender and its role as a constitutive element of social, political, economic, and legal structures; feminist theory; and the development of ideas about femininities, masculinities, and sexualities. Gender is examined as it intersects with class, ethnicity, and nationality. The Study of Women and Gender establishes gender as a fundamental category of cultural and social analysis and offers new perspectives from which to study the diversity of human experiences.

The minor in the Study of Women and Gender provides students with an academic specialization in a field of study that will broaden an understanding of gender relations and dynamics from a variety of scholarly perspectives. The minor can be combined effectively with most majors.

### REQUIREMENTS FOR THE MINOR

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete seven courses from the course offerings in the Program for the Study of Women and Gender.

The required courses are divided into three sections:

1. WGST 50. Gender in Culture and Society, consists of an introduction to the discipline of women's and gender studies.
2. Students select five courses from the approved list. These courses must be selected from four separate categories as designated by the Program, representing a wide range of perspectives on feminist scholarship and the study of women and gender. At least three of these courses must be upper division. No more than two courses may be in the student's major.
3. Capstone course. WGST 199. A directed reading/research project or internship under the supervision of a faculty member in the program. A senior thesis on a gender topic in the student's major may be substituted, on approval by the director.

Completion of the minor is noted on a student's transcript and the student receives a certificate acknowledging his/her accomplishment.

### DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

*Note: For descriptions, see the listings of the relevant departments. In addition to the courses listed below, many departments offer occasional special topics, directed reading/directed research, and seminar courses on women or gender studies topics. Students should consult with the program director to determine the applicability of these, as well as of courses taken at other institutions or while studying abroad, to the minor.*

## WOMEN AND GENDER STUDIES COURSES

***50. Gender in Culture and Society***
Examines the impact and consequences of gender in the daily lives of women and men in societies. An interdisciplinary perspective used to analyze the effects of societal institutions and processes. Particular attention given to the development and dynamics of gender inequality. (4 units)

***199. Directed Reading/Research/ Internship***
(2–5 units)

## COURSES BY DEPARTMENT

### Anthropology

90. Cross-Cultural Study of Women and Gender
157. Family and Kinship

### Art

140. Chicano/a Art
147. African American Women in the Visual Arts
188. Women and the Visual Arts

### Classics

141. Love and Relationships in Classical Antiquity
185. Women in Ancient Greece
186. Women in Ancient Rome
187. Family in Antiquity

### Computer Engineering

129. VDC Project

### Communication

122A. Communication and Gender

### Dance

66/166. Women in Dance History

### Economics

135. Gender Issues in the Developing World

## English

67. Introduction to Gay and Lesbian Literature
68. Literature and Women
69. Literature by Women Writers of Color
122. Culture and Film: Women and Film
125. Feminist Literary Theory and Criticism
139. Special Topics: U.S. Latina Film, Literature, and Visual Culture
156A. International Gay and Lesbian Literature
163. Readings in Comparative Literature: Medieval European Women
164. Themes in Comparative Literature: Myth in Women's Writings
168. Women and Literature
186A. Women in Ancient Greece
186B. Women in Ancient Rome
186C. Family in Antiquity

## Ethnic Studies

121. Chicana/o Families and Gender Roles
135. African American Women in the Visual Arts
141. Asian American Women

## French

113. Francophone Culture and Civilization: Black African Women Writers
174. Seminar: French Novels and Films: Culture, Gender, and Social Classes (in translation)
180. Seminar: Gender in Modern French History and Literature
182. Women in French Literature: Authors and Characters
183. 20th-Century French Women Writers
184. 20th-Century French Women Writers in Translation

## German

182. Women in German Literature: Authors and Characters
183. 20th-Century German Women Authors and Artists

### History

56. Wives, Mothers, and Goddesses: Women in Indian Literature
84. Women in American Society
113. Family in Antiquity
125. Medieval European Women
135. Gender in Modern French History and Literature
136. Gender/Race/Class in 20th-Century Europe
143. Seminar: Women in Political Revolutions
144. Women in African Societies
150. Women in East Asia
155. Women in South Asia
177. Gays and Lesbians in U.S. History
181. American Women Since 1900
182. Sex and Family in American History

### Italian

182. 20th-Century Italian Women Writers

### Japanese

182. Japanese Women's Literature in Translation

### Philosophy

4. Ethics and Gender
115. Feminism and Ethics

### Political Science

144. Comparative Political Systems: Women and Politics in Europe
154. Women and Politics

### Psychology

154. Psychology of Women

### Religious Studies

26. Gender in Early Christianity
28. Women and the Hebrew Bible
70. Women in the Biblical Traditions
71. Women in Contemporary Middle Eastern Muslim Societies
131. Feminist Theology
144. Gender, Body and Christianity
162. Feminist Ethics
168. Gender and Judaism
185. Sex and Gender in Chinese Religions

## Sociology

135. Gender and Social Change in Latin America
152. Women and Men in the Workplace
153. Race, Gender, and Class in the United States

## Spanish

148. 20th-Century Latin American Women Writers

## Theatre

151. Social History of Fashion II
164. Women in Theatre
167. Gender and Performance

# 8

# University Honor Societies and Awards

Santa Clara University sponsors numerous honor societies and awards to recognize and celebrate significant achievement by students. Some are University-wide, others are located in the college and schools, and some are within specific departments. Students are encouraged to learn more about these opportunities early in their careers at Santa Clara.

## HONOR SOCIETIES

Santa Clara University is proud to host 26 prestigious national honor societies in the liberal arts, sciences, business administration, and engineering. These societies reflect a long tradition of academic excellence, tracing their origins back at least 50 years. Some date from the 19th century and one dates from the 18th.

### Alpha Delta Gamma

Alpha Delta Gamma, the national honorary society for medieval and renaissance studies, was founded in December 1993 by the Program in Medieval and Renaissance Studies of the College of William and Mary in order to recognize faculty and students who share a love for the European Middle Ages and Renaissance. Alpha Delta Gamma strives to encourage the highest ideals of scholarship and intellectual attainment. To be eligible, a student must be a declared candidate for a minor in the Medieval and Renaissance Program, have completed at least three courses in the program, and have earned a grade-point average of 3.0 overall and 3.1 for the courses in the program.

### Alpha Kappa Delta

Alpha Kappa Delta, the national sociology honor society, was founded at the University of Southern California in 1920. The Santa Clara chapter was founded in 2000. The society's primary goal is to encourage social research for the purpose of service. To be invited to join, a student must be a sociology major of junior or senior standing, have an overall grade-point average of 3.3 or higher, and be sponsored by his or her academic advisor.

## Alpha Psi Omega

Alpha Psi Omega is the national theatre arts honor society founded in 1925 at Fairmont College. Chapters are called "casts" and the Alpha Gamma Psi Cast at Santa Clara University was started by five student charter members in the spring of 2000. Throughout the country, Alpha Psi Omega has sponsored the formation of theatre honors societies with the aim of encouraging dramatic production at every step in a person's academic career. The Alpha Gamma Psi Cast provides an opportunity for student leadership and a regard for academic excellence and active participation in the Department of Theatre and Dance.

## Alpha Sigma Nu

Alpha Sigma Nu, the national Jesuit honor society, was founded at Marquette University in 1915. The Santa Clara chapter was installed in 1942, and there are chapters at 28 universities and colleges across the country. Alpha Sigma Nu upholds the Jesuit values of academic excellence and service to the University and the community. Each year new members are selected for their commitment to excellence in scholarship and service.

## Beta Beta Beta

Beta Beta Beta Biological Sciences Society, the national honor and professional society for students of the biological sciences, was founded in 1922. The Santa Clara chapter was established in 1994. Its main emphasis is to stimulate scholarship, disseminate scientific knowledge, and promote biological research. Regular membership is reserved for those who achieve a superior academic record and demonstrate a special aptitude for the life sciences. Associate membership is for students with exceptional potential who are just beginning formal study and research in biology.

## Beta Gamma Sigma

Beta Gamma Sigma, the national honor society for students of business, was founded in 1913. It currently has more than 160 chapters and a total membership exceeding 100,000, and holds a position analogous to that of Phi Beta Kappa in the arts and Sigma Xi in the sciences.

## Delta Omicron

Delta Omicron, the international music fraternity, is a professional honor society in the field of music. Founded in September 1909 at the Cincinnati Conservatory of Music, Delta Omicron was created to foster fellowship through music, to encourage high scholastic achievement, to recognize excellence in musical performance, and to prepare students entering the professional world. The Gamma Omega chapter at Santa Clara University was established in September 1999 by 18 charter members. Membership is on the basis of talent, scholarship, and character, and is open to declared music majors and minors.

## Eta Sigma Phi

Eta Sigma Phi, the national classics honorary society, was founded at the University of Chicago in 1914 and became a national organization in 1924. Its primary purposes are to further the spirit of cooperation and good will among members of the classics profession, to stimulate interest in the study of the classics, and to increase knowledge of the art and literature of ancient Greece and Rome. The Epsilon Psi chapter of Eta Sigma Phi was founded at Santa Clara University in 1987. To be eligible for nomination to membership, a student must have taken at least two quarters of Greek or Latin or at least three quarters of classics courses and maintain a minimum 3.0 grade point average.

## Kappa Delta Pi

Kappa Delta Pi, an international honor society in education, was founded in 1911, at the University of Illinois. The Santa Clara chapter was established in 1996. Organized to recognize excellence in education, Kappa Delta Pi elects to membership those who exhibit the ideals of scholarship, high personal standards, and promise in teaching and allied professions. To be eligible for membership, students must have completed five quarters of college work, have at least 18 quarter hours of professional education courses programmed, rank in the upper quintile of their class, and have a cumulative GPA of 3.25 or better.

## Lambda Alpha

Lambda Alpha, the national anthropology honors society, was founded in 1968 at Wichita State University. The Santa Clara chapter was established in 1999. The society seeks to encourage and stimulate scholarship and research in anthropology by recognizing and honoring superior achievement in the discipline and among students. To be eligible for membership, students must have achieved junior status, completed five courses in anthropology, have a cumulative grade-point average of 3.0, and have a minimum grade-point average of 3.3 in anthropology.

## Lambda Pi Eta

Lambda Pi Eta is the official communication studies honorary society of the national Communication Association. As an accredited member of the Association of College Honor Societies, Lambda Pi Eta has over 180 active Chapters at colleges and universities across the United States. Theta Rho, the Santa Clara University chapter, was established in 1999. The goals of Lambda Pi Eta are to recognize, foster, and reward outstanding scholastic achievement; stimulate interest in the field of communication majors; provide an opportunity to discuss and exchange ideas about the field; establish and maintain close relationships and understanding between faculty and students; and explore options for further graduate studies. Members must be a communication major or minor; have a junior standing; have completed 18 quarter units in communication; have a 3.0 GPA overall and a 3.25 in communication courses; and be in good standing at the University.

## Phi Alpha Theta

Phi Alpha Theta, the international honor society in history, was founded in 1921 at the University of Arkansas. There are now more than 475 chapters in 49 states, Puerto Rico, Canada, and the Philippines. The Lamda Upsilon chapter, established at Santa Clara University in 1966, is active in student and educational programs. Members are selected on the basis of excellence in the study and writing of history.

## Phi Beta Kappa

Phi Beta Kappa, the oldest national honor society, was founded in 1776 in Williamsburg, Virginia, by students at the College of William and Mary. Its purpose is to celebrate excellence in all scholarly endeavors and to encourage educational breadth, including languages, mathematics, the sciences, and the humanities. There are now more than 250 chapters at universities throughout the country. The Pi chapter at Santa Clara University was installed in 1977. Installation of a chapter indicates that the United Chapters of Phi Beta Kappa have found a university's curricula sufficient in breadth and scholarly quality to warrant being honored by the society. Students are selected for membership on the basis of academic excellence, intensive study in a second language and college mathematics, and breadth of course work.

## Phi Lambda Upsilon

Phi Lambda Upsilon, the national chemistry honor society, was founded in 1899 at the University of Illinois "for the promotion of high scholarship and original investigation in all branches of pure and applied chemistry." It was the first honor society dedicated to a single scientific discipline. It comprises more than 60 chapters, with membership in excess of 50,000. Members must have senior standing, be in the top 20 percent of their chemistry class, and have a minimum grade point average of 3.5.

## Phi Sigma Iota

Phi Sigma Iota, the international foreign language honor society, was founded in 1922 at Allegheny College. The Beta Delta chapter was installed at Santa Clara University in 1982. The society recognizes remarkable ability and achievement in languages, literatures, and linguistics. It stimulates advanced work in these fields, fosters intercultural understanding, and promotes a spirit of amity between our own people and other peoples of the world. Juniors and seniors with at least four advanced-content courses completed in a qualifying language, a grade point average of 3.25 in that language, and a cumulative average of 3.0 may be eligible for membership.

## Phi Sigma Tau

Phi Sigma Tau was founded at Muhlenberg College in 1930 as Alpha Kappa Alpha. In 1955, it was incorporated as Phi Sigma Tau, a national honor society in philosophy. Its essential purpose is to promote ties between philosophy departments in accredited institutions and students in philosophy nationally. Santa Clara University received its charter in 1986. To be eligible for membership, students must have completed five quarters of college work, rank in the upper one-third of their class, and have completed at least three courses in philosophy with a grade point average of 3.0 or higher.

## Pi Mu Epsilon

Pi Mu Epsilon, the national honor society in mathematics, was incorporated in 1914 at Syracuse University to promote scholarly activity among college students. The California Eta chapter was founded in 1967 at Santa Clara University. Members are selected from the top fourth of their class in general college work. Upper-division students must have completed their mathematical work with honors; sophomores must have achieved a straight-A record in all mathematical courses taken.

## Pi Sigma Alpha

Pi Sigma Alpha, the national political science honor society, was founded at the University of Texas in 1920. There are approximately 460 chapters and more than 100,000 members nationally. In order to qualify for membership, graduating seniors must have a minimum 3.5 GPA in political science and an overall 3.0 GPA; juniors need a 3.7 GPA in political science and an overall 3.0 GPA.

## Pi Tau Sigma

Pi Tau Sigma, the mechanical engineering honorary society, was founded in 1915 at the University of Illinois. There are presently 150 chapters and 90,000 members nationwide. The Santa Clara Alpha Epsilon chapter was granted its charter in 1991. Its objectives are to foster high ideals in the engineering profession, stimulate and support departmental activities, promote professional welfare, and develop leadership and citizenship. Members are selected from the top fourth of the junior class and top third of the senior class in the Mechanical Engineering Department.

## Psi Chi

Psi Chi, the national honor society in psychology, was founded in 1929 for the purpose of encouraging, stimulating, and advancing the science of psychology. Presently, there are more than 200,000 members affiliated with more than 700 chapters on college campuses. The Santa Clara chapter was established in 1991. To be eligible for membership, students must have completed 12 or more units in psychology with a grade point average of 3.3, declared a psychology major or minor, and rank in the upper third of their class.

## Sigma Pi Sigma

Sigma Pi Sigma, the national physics honor society, was founded in 1921 at Davidson College, North Carolina. The society currently has more than 319 chapters and 40,000 members. The Santa Clara chapter was founded in 1969. Sigma Pi Sigma encourages a greater understanding and interest in the advanced study of physics, promotes research, and fosters the spirit of scientific inquiry. Members are selected from the upper quarter of their class and must also have a 3.25 grade point average in physics and mathematics.

## Sigma Tau Delta

Sigma Tau Delta, the national English honor society, was founded in 1924 at Dakota Wesleyan University. The Santa Clara chapter, Phi Phi, was established in 1987. Sigma Tau Delta recognizes scholarly achievement in all aspects of English language and literature, including creative and critical writing. Members must be in the upper 33 percent of their class and must also have a B average in English.

## Sigma Xi

Sigma Xi was founded in 1886 by a group of scientists at Cornell University to encourage original investigation in pure and applied science. The Santa Clara chapter was established in 1967. Students who have demonstrated an aptitude for original scientific research are eligible for associate membership. The requirements for full membership include noteworthy achievements in research as demonstrated by a doctoral dissertation, publications, or patents.

## Tau Beta Pi

Tau Beta Pi, a national honor society for technical students, was founded in 1885 at Lehigh University. There are now more than 195 chapters with a total membership exceeding 296,000. The Santa Clara chapter was established in 1956. This organization recognizes superior scholarship and exemplary character. Members are selected from the upper fifth of the graduating class in engineering and must demonstrate personal integrity, breadth, adaptability, and unselfish activity.

## Theta Alpha Kappa

Theta Alpha Kappa is the national theology and religious studies honor society for both professors and students. The society was founded in 1976 at Manhattan College. The Santa Clara chapter, Alpha Phi, was granted a charter in 1981. Its main purpose is to further the study of theology and religious studies by fostering excellence in these studies. Junior and senior religious studies majors and minors with a grade point average of 3.5 and a cumulative index of 3.0 are eligible for admission to the society.

## Upsilon Pi Epsilon

Upsilon Pi Epsilon is the honor society for the computing sciences. The society was founded at Texas A&M University in 1967 to promote high scholarship and original investigation in the computing sciences. The Santa Clara Lambda chapter was established in 1990. Members must be computing majors; have been in residence for at least one quarter; completed 96 units, at least 20 of which must be from computing courses; and earned a 3.3 GPA in computing courses and a cumulative grade point average of 3.35.

## SCHOLARSHIPS

The University awards annual scholarships to students based on financial need and academic promise or special talents. For more information, refer to the Financial Information section of this bulletin and to the information bulletin published by Student Records and Financial Services.

## UNIVERSITY AWARDS

***Kolvenbach Award*** Established in 2001 on the occasion of the sesquicentennial of Santa Clara University, in honor of The Very Reverend Peter Hans Kolvenbach, Superior General of the Society of Jesus, this award is given by the President to a graduating senior who exemplifies the ideals of Jesuit education, especially being a "whole person of solidarity in the real world" and having the courage and faith to build a more just and humane world.

***Nobili Medal*** Established in 1876 by Joseph A. Donohoe, in honor of John Nobili, S.J., founder of the University, this award is given to the male graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the academic vice president.

***Saint Clare Medal*** Established by the University in 1968 in honor of Saint Clare of Assisi, this award is given to the female graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the academic vice president.

***Valedictorian*** Established by the University in 1980, this honor is conferred annually on a graduating senior selected for outstanding academic achievement and University service as determined by the president in consultation with the faculty of the University and the provost.

## SPECIAL AWARDS

### Applied Ethics

***Markkula Prize*** Established in 1997 by the Advisory Board of the Markkula Center for Applied Ethics in honor of A. C. "Mike" Markkula Jr.'s leadership as chairman of the board. This award is given annually to a student in recognition of outstanding work in applied ethics.

### Community Service

***Richard J. Riordan Awards*** Established in 1984 by Richard J. Riordan, these awards are given annually to four students judged outstanding in community service.

### Ethnic Studies

***Matt Meier Prize*** Established in 1994 in honor of Professor Matt Meier, a major contributor to the field of ethnic studies, this prize is given by the Ethnic Studies Program to the ethnic studies minor or liberal studies minor with an ethnic studies concentration who writes the best essay on an ethnic studies topic.

### Forensics

***Ryland Prize*** Established in 1897 by the Hon. Caius T. Ryland, this award (formerly Ryland-Owl Prize) is given to the winner of the annual Ryland debate. Focusing on current social and political issues, this public debate is held each spring and judged by a faculty committee.

### Journalism

***Handlery Prize*** Established in 1947 by Mrs. Rose Handlery in memory of her son Raymond of the class of 1934, this prize is awarded each year to the graduating senior who has contributed most to the success of student publications at the University.

***Edward Shipsey, S.J., Journalism Prize*** Established in 1984 by Alfred Orr Kelly in honor of the Rev. Edward J. Shipsey, S.J., the prize is awarded to an outstanding junior student who has made a commitment to a career in journalism.

### Leadership

***Student Life Award*** This award, established in 1984, is presented to the senior who has contributed to the overall quality of life in the University community.

### Performing Arts

***Charles Lampkin Award*** This annual award, established in 1989 in honor of Charles Lampkin, the late actor and University artist-in-residence, is given to the junior or senior African American student who has demonstrated excellence and commitment to performance in theatre, music, dance, or television.

### Women's Studies

***Mary Gordon Prize*** Established in 1992 in honor of Professor Mary Gordon, founder of the Women's Studies Program and its first director, this prize is awarded to the women's studies minor student who writes the best essay on a women's studies topic.

## LEAVEY SCHOOL OF BUSINESS AWARDS

***Professor O. Robert Anderson Award*** Established in 1973, this award is given in memory of Professor O. Robert Anderson, who taught accounting at the University. It is awarded annually to the accounting major judged outstanding in scholarship by the faculty of the department.

***Albert F. Bruno Award*** Established in 1982 in memory of Albert F. Bruno by Albert V. Bruno and family, this award is conferred annually to the outstanding marketing major on demonstration of scholarship, leadership, personal character, and career potential.

***Charles J. Dirksen Prize*** Established in 1965 by Dr. Eliot Jones in honor of Charles J. Dirksen, late dean and professor of marketing emeritus, this prize is awarded to the junior in the Leavey School of Business judged outstanding in scholarship by the faculty.

***Financial Executives Award*** Established at Santa Clara in 1980, this award is given annually by the Financial Executives Institute to the senior, junior, and sophomore finance majors judged outstanding in scholarship and executive potential by the finance faculty and members of the institute.

***Charles and Barbara Hazel Award for Excellence in Undergraduate Economics*** Established by Charles and Barbara Hazel, it is awarded annually to the graduating seniors who have achieved superior academic performance as economic majors.

***Isabel Jones Prize*** Established by Dr. Eliot Jones in 1956 in memory of his wife, Isabel, this award is given to the senior in the Leavey School of Business judged most outstanding in scholarship by the business school faculty.

***Operations and Management Information Systems Award*** Awarded to the junior major judged outstanding in scholarship and executive potential in the field of operations and management information systems.

***Organizational Analysis and Management Award*** Granted to the senior major who, through high overall grade point average, has demonstrated noteworthy scholarship, strong leadership, and managerial aptitude in co-curricular activities.

***Outstanding Accounting Student Award*** Established in 1973, this award is given annually by the San Jose Chapter of the California Society of Certified Public Accountants to the senior accounting major judged outstanding in scholarship and professional career potential by a committee of the chapter.

***Wall Street Journal Student Achievement Award*** Established at the University by Dow Jones Corp. in 1960, this award is given to the senior finance major with the highest scholastic average.

## SCHOOL OF ENGINEERING AWARDS

***William J. and Marijane E. Adams Jr. Awards*** Established in 1990 by William J. and Marijane E. Adams Jr., one award is conferred annually to an outstanding mechanical engineering undergraduate student with financial need; and one award provides a stipend for an outstanding graduating senior in mechanical engineering to continue to graduate school at Santa Clara.

***Edmund C. Flynn Memorial Awards*** Established in 1981 by Mrs. Edmund C. Flynn in memory of her husband, these awards are given to the graduating civil engineering student presenting the best thesis and to the two junior civil engineering students with the highest scholastic averages.

***Raymond M. Galantine Award*** Established in 1996, this award recognizes an outstanding engineering student who has demonstrated a commitment to putting into practice the Catholic and Jesuit ideal of people in the service of others. The award honors the memory of Raymond M. Galantine '53, whose life was an example of this ideal.

***Regan Memorial Award*** Established in 1977 in memory of Patrick W. Regan of the class of 1947, this award is given to the outstanding juniors in civil engineering as determined by the faculty of the department.

***School of Engineering Humanities Award*** Conferred each year on an engineering student who has been nominated by members of the humanities faculty and selected by the School of Engineering for outstanding work in the humanities while maintaining a strong record in engineering.

## COLLEGE OF ARTS AND SCIENCES AWARDS

### Chemistry

***American Chemical Society Award in Analytical Chemistry*** Sponsored by the American Chemical Society Division of Analytical Chemistry to honor a junior student for excellence in both lower- and upper-division analytical chemistry courses.

***American Chemical Society Polyed Award*** Sponsored by the Polymer Education Committee of the American Chemical Society to honor outstanding achievement in the Organic Chemistry I, II, and III course sequence.

***American Institute of Chemists Foundation Award*** Awarded to an outstanding senior chemistry major in recognition of a record of leadership, ability, character, and scholastic achievement.

***CRC Freshman Chemistry Achievement Award*** Sponsored by the Chemical Rubber Co. to honor a freshman student for outstanding performance in the General Chemistry I and II course sequence.

***Professor Joseph F. Deck Award*** Established in 1973, this award is given by the Chemistry Department faculty to the outstanding student majoring in chemistry who has excelled in studies and undergraduate research, extracurricular activities, leadership, and generous tutoring of fellow students, while maintaining a B average.

## Classics

***Arete Prize*** Established in 1997, this prize is given to the classics major or minor who writes the best single essay or research paper on a classical topic, as determined by the Classics Department faculty.

***Walter J. Kropp Prize*** Established in 1997 in memory of Walter J. Kropp, S.J., by the faculty of the Classics Department, this award is given to the senior classics major who has attained the highest average in classics courses.

## Communication

***Communication Department Prize*** Established in 1985 by alumni and friends, this award is given by the Communication Department faculty to the graduating senior who best meets the goals of the department.

***Justin T. McCarthy Award*** Established in 1976 in memory of Justin T. McCarthy, this award is given to the senior student who has excelled in oratory or other forms of public expression.

## English

***Academy of American Poets Prize*** Founded in 1994 by Victoria Verga Logan and Frank Verga Jr., in memory of Tamara Verga, this prize is given to the undergraduate who writes the best group of poems as determined by an annual competition.

***Freshman Essay Prize*** Established in 1983, this prize is given by the English Department to honor an outstanding student essay written during English 1 (Composition and Rhetoric I).

***Christiaan Theodoor Lievestro Prize*** Founded in 2000 by Christiaan T. Lievestro, this prize is awarded to the student who produces the best critical essay in an English senior seminar as judged by a faculty committee.

***McCann Short Story Prize*** Established in 1894 in honor of Daniel M. McCann, B.S. 1884, this award is given by the English Department to the author of the best short story as determined by an annual competition.

***Shipsey Poetry Prize*** Established in 1954 by Richard W. Schmidt in honor of the late Edward Shipsey, S.J., this prize recognizes the outstanding contribution in the art of poetry as determined by an annual competition.

***Katherine Woodall Prize in Literary Criticism*** Established in 1995 by Katherine Woodall, this prize is awarded to the senior English major whose essay demonstrates knowledge of the critical reception of the work and an exceptional articulation of an original reading of a text.

## History

***The Redwood Prize*** An annual prize established in 1908 by the executive committee of The Redwood, this award is given to the student who writes the best essay on a historical subject as determined by the History Department faculty.

## Italian

***San Jose Civic Club Prize*** Established in 1956, this award is given by the Italian faculty to the student most diligent in the study of Italian.

## Language

***Richard F. Rebello Phi Sigma Iota Award*** Established in 1986 by the family of the late Richard Rebello, longtime University staff member, these awards are given by the Modern Languages Department to junior or senior language majors for outstanding accomplishments in the study of a foreign language and culture.

## Liberal Studies

***Academic Achievement Award*** Established in 1995, this award is given to the senior liberal studies major with the highest overall grade point average at Santa Clara.

***Pre-Teaching Award*** Established in 1995, this award is given to the senior liberal studies students judged most outstanding in scholarship and professional service who plan to go on to careers in teaching.

## Mathematics

***George W. Evans Memorial Prizes*** Established in 1972 by the family and friends of the late George W. Evans II, professor of mathematics at the University, these awards are given to the male and female students placing highest in the William Lowell Putnam Mathematical Competition. A third award is given to the student judged most outstanding in mathematical writing and research by a panel of mathematics consultants.

***Freshman Mathematics Prize*** Established in 1958, this annual award is given by the faculty of the Mathematics Department to the freshman student who demonstrates excellence in mathematical study and achievement, determined by a competitive examination each spring.

***The Paul R. Halmos Prize*** This prize is awarded to the senior student or students with an outstanding academic record judged to have distinguished themselves in mathematics or computer science beyond the standard course work.

## Music

***American Choral Directors Association National Choral Student Award*** This award is given to a student who has been involved in continued participation in choral ensembles, has provided service to the ensemble and conductor, has demonstrated a high degree of choral proficiency and music literacy, and has contributed to the advancement of choral singing at the University.

***Department of Music Certificate for Distinguished Musical Performance*** Established in 1980 by the faculty of the Music Department, the performer's certificate is awarded to a student demonstrating exceptional accomplishment in music and excellence in musicality and technical proficiency.

***Arrigo and Catherine Descalzi Prize*** Established in 1990 in honor of Arrigo and Catherine Descalzi, this award is presented to the senior music student who, in the judgment of the Music Department faculty, best demonstrates technical and artistic growth and dedication to the art of music.

## Natural Science

***Orella Prize*** Established in 1915 by Dr. Firim R. Orella, B.S., 1889, and funded in 1945 by his wife, Albertine S. Orella, this prize is awarded to the senior science student who attains the highest average in scientific subjects.

## Philosophy

***Fallon Prize*** Established in 1995 in memory of Timothy Fallon, S.J., by the faculty of the Philosophy Department, this award is given to the junior student demonstrating outstanding achievement in the study of philosophy.

***Sourisseau Prize*** Established in 1956 by Eva Sourisseau in honor of her parents and family, this award is given by the Philosophy Department faculty to the senior student demonstrating outstanding achievement in the study of philosophy.

## Physics

***Carl H. Hayn Physics Prize*** Established in 1997 by William and Katherine Duffy in honor of Carl H. Hayn, S.J., longtime physics professor at Santa Clara University. The prize is awarded annually to the most outstanding student in the sequence Physics for Scientists and Engineers I, II, and III as selected by the faculty who teach the sequence.

## Political Science

***Michael Shallo Prize*** Established by the University in 1955 in honor of Michael Shallo, S.J., this award is given by the Political Science Department faculty to the student judged most proficient in political science.

### Psychology

***Wilhelm Wundt Award*** Established in 1988, this annual award is given by the Psychology Department faculty to the senior student who has excelled in scholarship, research, and service to the department.

### Religious Studies

***Religious Studies Prize*** Established in 1950 by the president of the University, this prize is given each year by the Religious Studies Department faculty to the student most proficient in religious studies.

### Sociology and Anthropology

***Witold Krassowski Sociology/Anthropology Awards*** Established in 1979 by the department, alumni, and friends in honor of Professor Witold Krassowski, the first sociologist at Santa Clara, these prizes are awarded by the faculty to the students in the department demonstrating exemplary research in sociology and anthropology.

### Theatre and Dance

***William H. Leahy Prize*** Established in 1925 in honor of William H. Leahy by his wife and his brother James, this prize is awarded to the graduating senior who has made the greatest contribution to dramatic art at Santa Clara as determined by the members of the Theatre and Dance Department.

## DEPARTMENT OF MILITARY SCIENCE AWARDS

***Armed Forces Communications and Electronics Award*** Established by the Department of the Army at Santa Clara in 1973, this annual award is given by the Military Science Department faculty to the cadet in a communications or electronics field who excels in academic achievement, demonstrated leadership potential, and meritorious contribution to the ROTC program.

***Association of the U.S. Army ROTC Medal*** Established at Santa Clara in 1956 by the Department of the Army, this award is given by the Military Science Department faculty to the junior cadet judged most outstanding in meritorious academic attainment, exemplary conduct, efficiency, and fidelity.

***George C. Marshall ROTC Award*** Established at Santa Clara in 1977 by the Department of the Army, this award is given by the Military Science Department faculty to the cadet judged most outstanding in military studies and leadership.

***Superior Cadet Award*** Established by the Department of the Army at Santa Clara in 1958, these ribbons are given by the Military Science Department faculty to the cadet in each of the four years of training who consistently demonstrates potential qualities of an officer, outstanding performance of duty, and overall proficiency.

# 9

# Admissions and Financial Information

## ADMISSION TO FRESHMAN STANDING

### Criteria

The University makes selective decisions regarding applicants for admission based on the following criteria: first, achievement in college preparatory courses; second, scores on College Entrance Examination Board tests; third, school recommendations; fourth, personal factors such as extracurricular involvement, character, leadership, and one personal essay; and fifth, relationship to the University.

Admission to freshman standing at Santa Clara depends on a continued high level of performance during the remainder of the applicant's senior year in high school and on receipt of a high school diploma. If a significant change occurs in academic work during this year, the Committee on Admissions will reevaluate the acceptance in light of that change.

### Recommended Courses

The following high school courses are recommended for a student applying for admission to the University as a freshman:

| | Number of Yearlong Courses | | |
|---|---|---|---|
| **Course** | *Liberal Arts Majors* | *Business and Social Science Majors* | *Natural Science, Mathematics, and Engineering Majors* |
| Algebra | 2 | 2 | 2 |
| English | 4 | 4 | 4 |
| History | 1 | 1 | 1 |
| Foreign language (one) | 3 | 3 | 3 |
| Plane geometry | 1 | 1 | 1 |
| Laboratory science (upper division) | 1 | 1 | 2* |
| Trigonometry | 1/2 | 1/2 | 4 |
| Elective** | 3 1/2 | 2 | 1/2 |

* Physics and chemistry are recommended laboratory sciences for natural science and engineering majors.

** Elective courses must be in advanced foreign languages, mathematics, laboratory science, or other solid college-preparatory courses.

## Campus Visits

The University encourages all candidates to visit the campus, preferably when school is in session, so they can tour the campus with a student guide. Although interviews are not required, a member of the admissions staff will be happy to meet with candidates. Interviews are available for high school seniors only. Appointments should be made two weeks in advance.

## Admissions Procedure

Prospective freshman students should:

1. File the application and service fee of $50 with the Admissions Office (application forms may be obtained from that office, submitted online, or downloaded from the University's Web site at www.scu.edu/ugadm);
2. Submit to the Admissions Office one recommendation from a high school counselor, teacher, or administrator evaluating scholastic ability and character (recommendation form is provided with application);
3. Request the high school to forward a sixth-semester transcript to the Admissions Office. This transcript should also list the courses to be taken during the seventh and eighth semesters. *All students should also submit a seventh-semester transcript as soon as possible;*
4. Take the Scholastic Assessment Tests (SAT I)* no later than December of the senior year and request that scores be sent to the University. (For information on dates and places of this test, write to the College Board, ATP, 1947 Center St., Berkeley, CA 94704, or Box 592, Princeton, NJ 08541, or contact the College Board online at www.collegeboard.com);
5. Make certain all of the above are completed and the required materials are submitted to the Admissions Office by November 15 for Early Action or January 15 for regular decision (full consideration cannot be assured for applications received after that date); and
6. Mail application materials directly to the Undergraduate Admissions Office.

## Sixth-Semester Decision

Students may seek an admissions decision after the sixth semester. Transcripts reflecting six semesters of work and recommendation forms should be sent by the high school. If the Committee on Admissions requires additional academic information before reaching its final decision, the student will be so informed in a letter.

## Advanced Placement

Santa Clara participates in the Advanced Placement Program to recognize college-level academic achievement prior to matriculation and to encourage students to pursue advanced studies in their areas of interest.

The following chart indicates the subject examination, required scores, and Santa Clara credit granted in the Advanced Placement Program.

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* The SAT I is preferred, but the American College Testing (ACT) exam is also accepted.

Credit or placement is determined on the recommendation of the appropriate department, which will review the student's scores and may also review the student's high school record, teacher evaluations, substantiation of independent studies, and transcripts from other colleges. Course credit is offered to students who qualify in subjects according to the schedule issued by the University registrar. Students will be notified of such credit on matriculation at Santa Clara.

## ADVANCED PLACEMENT POLICY

| **Examination** | *Score Required* | *Credit (qtr. units)* | *SCU Course Waived* |
|---|---|---|---|
| Art: History | 4, 5 | 4.0 | Departmental determination |
| Art: Studio Drawing | 4, 5 | ** | Departmental determination |
| Art: Studio General | 4, 5 | ** | Departmental determination |
| Biology | 4, 5 | 4.0 | University CORE non-lab science requirement |
| Chemistry | 4, 5 | 5.0 | Chemistry 11 |
| Comparative Government and Politics | 4, 5 | 4.0 | Political Science 2 |
| Computer Science A | 4, 5 | 4.0 | COEN 11 or OMIS 30 or 34 or Math 10 |
| Computer Science AB | 3, 4 | 4.0 | COEN 11 or OMIS 30 or 34 or Math 10 |
| | 5 | 4.0 or 8.0 | COEN 11 or OMIS 30 or 34 or Math 10 and 61 |
| Economics (macro) | 4, 5 | 4.0 | Economics 13 |
| Economics (micro) | 4, 5 | 4.0 | Economics 11 |
| English: Language and Composition | 4, 5 | 4.0 | English 1 |
| English: Literature and Composition | 4, 5 | 4.0 | 3rd Writing requirement for Arts and Sciences and Business students |
| Environmental Science | 4,5 | 4.0 | Chemistry 1 |
| European History | 4, 5 | 4.0 | History 13 |
| French Language | 4, 5 | 4.0 | French 21 |
| French Literature | 4, 5 | 4.0 | French 22 |
| German Language | 4, 5 | 4.0 | German 21 |
| Human Geography | 4,5 | 4.0 | Anthropology 50 or Sociology 50 |
| Latin: Catullus–Horace | 4, 5 | 4.0 | None |
| Latin: Vergil | 4, 5 | 4.0 | None |

** Department determines the unit credit to be awarded and/or the course waived.

| Examination | *Score Required* | *Credit (qtr. units)* | *SCU Course Waived* |
|---|---|---|---|
| Math: Calculus AB | 4, 5 | 8.0 | Math 11 and 12 or Math 30 and 31 |
| Math: Calculus BC | 3 | 4.0 | Math 11 or Math 30 |
| | 4, 5 | 12.0 | Math 11/30, 12/31, and 13 |
| Music: Listen/Literature | 4, 5 | 4.0 | Departmental determination |
| Music: Theory | 4, 5 | 4.0 | Departmental determination |
| Physics B | 4, 5 | 4.0 | Physics 11 |
| Physics C: Mechanical | 4, 5 | 4.0 | Physics 31 |
| Physics C: Electrical and Magnetic | 4, 5 | ** | Physics 33 |
| Psychology | 4, 5 | 4.0 | Psychology 2 |
| Spanish Language | 4, 5 | 4.0 | Spanish 21 |
| Spanish Literature | 4, 5 | 4.0 | Spanish 22 |
| Statistics | 4, 5 | 4.0 | Math 8 or Busn 40 |
| U.S. Government and Politics | 4, 5 | 4.0 | Political Science 1 |
| U.S. History | 4, 5 | 4.0 | History 7, 8, or 9 |

** Department determines the unit credit to be awarded and/or the course waived.

## International Baccalaureate Policy

Santa Clara University recognizes the International Baccalaureate (IB) Program for admission and placement purposes and often awards credit for grades of 5, 6, or 7 in the higher-level examinations. Final decisions, however, are made individually by the appropriate academic departments after consulting with the Drahmann Advising and Learning Resources Center. No credit is awarded for subsidiary-level examinations.

## Admission to Advanced Standing (Transfers)

Each year the University accepts a number of transfer students, principally at the sophomore and junior levels. Since applications exceed the number of students who can be accommodated, no specific statement can be made about the quality of work (GPA) that will enable a transfer applicant to be accepted. Only students in good standing at the last college attended will be considered. No student on academic or disciplinary probation or suspension will be considered for admission.

Ordinarily, no minimum number of units is required for transfer admission. However, students who were not accepted as freshmen cannot be considered until they have completed at least 45 quarter units or 30 semester units of transferable college work. In general, students' class standing is determined by the number of units applicable to their degree program.

The Scholastic Assessment Tests of the College Entrance Examination Board are required of transfer applicants who have completed less than 45 quarter units or 30 semester units of transferable work. A high school transcript and transcripts from all colleges and universities attended are required of all applicants.

Transfer students may apply for admission for fall and winter quarters. Deadlines for applications to those terms are fall, May 15; winter, October 15.

## Transfer Credit

Transfer credit is determined by the Drahmann Center following the student's acceptance. No evaluation will be made before that time. The following general statements apply to transfer credit:

Santa Clara University awards a maximum of 88 quarter units of transfer credit to students who have completed, with a grade of C or better, courses taken at other accredited universities and colleges. Transfer credit will not be awarded for courses taken on a pass/no pass or credit/no credit basis. Students admitted to the School of Engineering or Engineering Physics majors may transfer a maximum of one-half of their degree requirements. The academic levels of these courses must be essentially equivalent to those of similar courses offered at Santa Clara. Courses or credit gained from continuing education or from practica or internships (i.e., experiential learning) are typically excluded.

Work done at other institutions will not be used in calculating grade point averages or class rankings at Santa Clara, but will be considered when determining honors at graduation.

- Technical or trade courses and courses from regionally unaccredited institutions, trade schools, and extension or correspondence programs do not transfer.
- Transfer courses completed at a foreign university must be translated and evaluated by an approved agency at the student's expense.
- Students who are already enrolled at Santa Clara University and who intend to take courses at other institutions should refer to the policy governing the transfer of units: http://www.scu.edu/bulletin/undergraduate/regulations.cfm. Students who are on academic leave from Santa Clara should consult with the Drahmann Center and chair of their major department if they are considering enrolling in courses at other institutions. In this way, the selection of nontransferable courses can be avoided. Appropriate approval forms are available from the Student Records Office or the Drahmann Center.

## Recommended Courses for Transfers

Students applying for transfer to Santa Clara enhance their chances for admission by completing University Core and College requirements outlined under each undergraduate division of this bulletin. Preference will be given to students who have completed the following courses:

- College of Arts and Sciences: English composition (2 semesters or quarters); college-level mathematics (1 semester or quarter); natural science (1 semester or quarter)

- School of Business: English composition (2 semesters or quarters); calculus and analytic geometry (2 semesters or quarters); accounting (2 semesters or 3 quarters); microeconomics; macroeconomics
- School of Engineering: English composition (2 semesters or quarters); calculus (2 semesters or 3 quarters); chemistry (1 semester or 1 quarter); physics (2 semesters or 2 quarters)

## ADMISSION OF INTERNATIONAL STUDENTS

Santa Clara University is authorized under Federal law to enroll nonimmigrant students. In order to be eligible for enrollment, an international applicant must be accepted as a full-time, degree-seeking student.

Non-native English speakers must present a score of at least 213 in the Test of English as a Foreign Language (TOEFL), which is administered by the Educational Testing Service. Non-native English speakers, both freshmen and advanced-standing applicants, must also take the Scholastic Assessment Tests of the College Entrance Examination Board.

## ADMISSION OF PART-TIME STUDENTS

The University does not admit degree-seeking students on a part-time basis. Students wishing to take an individual course should contact Undergraduate Admissions for an application for nonmatriculants. Students eligible for admission may enroll but only on a space-available basis.

## GRADUATION RATE

The Santa Clara University 2001–2002 six-year graduation rate for the 1996 freshman class is 80.9 percent; the five-year rate for the 1997 freshman class is 83.1 percent; and the four-year rate for the 1998 freshman class is 75.4 percent.

## FINANCIAL INFORMATION

### Financial Responsibility

Students assume responsibility for all costs incurred as a result of enrollment at the University and agree to abide by all University policies and procedures. It is the responsibility of the student to keep updated on their student balance and financial aid information and maintain current valid address information at all times to ensure receipt of all University correspondence in a timely manner. If financial guidance is needed, students and/or their parents should contact the appropriate offices. Counselors are available in the Financial Aid Office to discuss financial aid needs. The Student Accounting Services or Student Loan Services staff can explain the payment options that are available.

## Release of Information to Third Parties

The Family Education Rights and Privacy Act (FERPA) of 1974 protects the confidentiality of the students' records. The University staff is committed to abiding by the guidelines of this Federal regulation. The University is authorized under provisions of FERPA to release "Directory Information," upon request, unless a student explicitly asks the University not to do so. For more information on FERPA and the definition of "Directory Information," please visit the University Web site at www.scu.edu/ferpa/. No other student information, such as billing and account information concerning tuition and fees, housing costs, or financial aid, or information concerning enrollment, grades, or other student records may be released to a third party without written authorization from the student. Third-party restrictions include, but are not limited to, parents, spouses, and sponsors. Students may, at their discretion, grant the University permission to release their student records information to a third party by completing a Student Information Release form.

## Enrollment Policy

Students must be officially registered following the procedures outlined in the *Undergraduate Schedule of Classes.* Students may not sit in classes without formally enrolling. Registration is not complete until all tuition, fees, room, and board charges have been paid by the published deadline for each term. Obtaining an instructor's signature on an add/drop form does not constitute enrollment. Initial registration or class additions will not be accepted beyond the late registration period for each term. Please check the academic calendar for the late registration dates on the Student Records Web site www.scu.edu/studentrecords/calendar/.

## Tuition and Fees

Tuition and fees rates are listed in the *Undergraduate Schedule of Classes* published by the Office of Student Records. This rate information is also listed in the *Billing Guide* and the *Student Accounting Services Information Guide.* The *Student Accounting Services Information Guide* is mailed to all students during the month of June. The *Billing Guide* is also sent to all students with the billing statement each term. Current year tuition and fee information is also available on the Santa Clara Web site, www.scu.edu.

## Housing Rate Information

The room and board rate information is mailed to all students who are to receive housing contracts. Housing room and board rates are also published in the *Billing Guide* and in the *Student Accounting Services Information Guide.*

*Note: All tuition, room, and board costs are due and payable in full no later than the announced payment deadline for each term. The payment deadlines are published in the* Undergraduate Schedule of Classes *and are also listed in the* Billing Guide *and the* Student Accounting Services Information Guide.

### Course Fees

Certain courses in the College of Arts and Sciences and the School of Business, especially those involving studio, laboratory, and computer instruction, charge fees to cover the cost of specialized materials, supplies, equipment maintenance, and field trips. Fee information pertinent to these courses is published on a quarterly basis in the *Undergraduate Schedule of Classes*. There are also fees for private lessons on instruments, in voice, and in music composition; the fees, which vary according to the length of the lesson, are published quarterly in the *Undergraduate Schedule of Classes*.

### Course Fee Refund Policy

Students who drop a course with a course fee during the first week of classes will be refunded the amount of the fee in full. If the course is dropped after the first week, there will be no refund of the course fee.

### Temporary Part-Time Enrollment

A lower-division student who has obtained permission from the Drahmann Center to enroll for fewer than three (3) term courses, or an upper-division student who has obtained permission to enroll for fewer than two (2) term courses, regardless of the unit value of the courses will be considered enrolled in a temporary part-time enrollment status. These students will be assessed a special one- or two-term course rate for that term. For financial aid eligibility purposes, six (6) units is the minimum number of units to be considered enrolled at least half time.

## PAYMENT PROCEDURES

### Rights and Responsibilities

Santa Clara University considers all student tuition and loan accounts as legal and moral obligations. The Office of Student Accounting Services will notify the student of outstanding accounts. However, it is the student's responsibility to maintain current address records at the Office of Student Records. Accounts that remain unpaid may be reported as delinquent to a credit bureau. These accounts may be placed with a collection agency or an attorney, and the student will be responsible for collection costs and attorney's fees. All cost of collection incurred by the University must be paid in full prior to a student returning or re-enrolling at Santa Clara University.

Students who have unpaid accounts at the University or who defer payment without approval are subject to dismissal from the University. All unpaid balances will accrue 10 percent interest from the defaulted payment date in accordance with California State law.

## Returning Students

An advance billing statement, which estimates full-time tuition, actual Residence hall cost, and meal-plan choice, will be sent to each student at his/her permanent address. Any student who registers is obligated to pay tuition and fees by the published financial clearance (payment) date, even if he/she does not receive a bill. The financial clearance deadlines are as follows:

| | |
|---|---|
| Fall quarter: | Last week in August |
| Winter quarter: | Last week in November |
| Spring quarter: | First week in March |

Deadlines are subject to change without notice.

If payment is not received or a proper deferment is not obtained through the Office of Student Loan Services, a late payment fee will be assessed and a hold will be placed on the record. The hold will prevent the release of transcripts or diplomas and prevent registration and access to any registration services or other University services. Inquiries regarding account status should be directed to the Office of Student Accounting Services (408-554-4412). Remittances should be made payable to Santa Clara University and mailed to Santa Clara University, File 72662, P.O. Box 60000, San Francisco, CA 94160-2662.

## Incoming Freshman and Transfer Students

The University requires payment in full of tuition, residence-hall assignment charges, and meal-plan cost by the last day of the add/drop period for that term. An advance billing statement, which estimates full-time tuition, actual residence-hall assignment, and board-plan choice, will be sent to the permanent address. The statement must be paid by the due date on the bill to avoid assessment of a late payment fee.

## MONTHLY PAYMENT PLANS

Many families prefer to pay academic expenses from monthly income rather than make one large cash payment each term. Two installment plans are available to accommodate these needs. Academic Management Service Budget Plan (AMS), in cooperation with Santa Clara University, offers a 12-month installment payment plan for the regular academic year. Enrollment for this plan must be made at least six weeks before the first payment is due, which is June 1. Please contact AMS at 1-800-635-0120 or Student Accounting Services to request an enrollment packet if you wish to join this plan. Student Loan Services also offers a tuition deferment plan or installment plan on a term-by-term basis. Students who are unable to meet a term's payment deadline pending receipt of financial aid or other extraordinary circumstances should contact Student Loan Services at 408-554-4620 to obtain a tuition and fee deferment. Tuition and fee deferments must be obtained before or by the term's payment deadline in order for the account to be considered financially clear for the term. Please note that both plans charge an enrollment fee.

## GUARANTEED TUITION PLAN

The Guaranteed Tuition Plan is a payment plan whereby families may prepay up to four years of tuition. The University guarantees that the student's tuition will not increase during the prepaid period. Payment of the required prepaid tuition and mandatory fees may be made in the following ways:

1. Lump sum payment from the family's own resources
2. Prepaid loan from a commercial lender

## TUITION REFUND POLICY
**(due to withdrawal from the University)**

The following schedule is for students who withdraw completely from the University after the first day of classes published for the term. It does not apply to students who withdraw from a class or classes after the end of the add/drop period but remain enrolled for the term. Full-time students who drop courses after the last day to add classes for the term will be considered full time for the remainder of the term. No tuition adjustment will be made.

Students who wish to withdraw from the University during a quarter must complete a withdrawal form and an exit interview at the Drahmann Center.

The date on which written notification of withdrawal is received at the Office of Student Accounting Services, not the last date of attendance by the student, will be the effective date on which any refund of tuition will be determined. This policy also applies to incremental tuition, special course fees, and lab fees. Written notification of withdrawal must be received prior to the first scheduled day of classes to qualify for a full tuition refund less a $50 registration cancellation fee. Written notification of withdrawal received on or after the first scheduled day of classes will result in a refund of tuition according to the following schedule:

Prior to the start of the quarter ..... (less $50) 100%
During the first week of the quarter .....75%
During the second week of the quarter .....50%
During the third week of the quarter .....25%

NO FURTHER REFUNDS AFTER THE THIRD WEEK.

No refunds will be made because of curtailment of services brought about as a result of strikes, acts of God, civil insurrection, riots or threats thereof, or other causes beyond the control of the University. All information in this bulletin concerning fees, charges, and refund schedules is subject to change without prior notice.

## RETURN OF FEDERAL TITLE IV FUNDS

In addition to the institutional refund policy, all students who withdraw completely from the University and who have federal financial aid, including federal student loans, are subject to the return of Title IV funds policy. Under this policy, it is assumed that a student earns his or her aid based on the period of time he or she

remains enrolled. Unearned Title IV funds, other than Federal Work Study, must be returned to the federal aid programs. Unearned aid is the amount of disbursed Title IV aid that exceeds the amount of Title IV aid earned.

During the first 60 percent of the enrollment period, a student "earns" Title IV funds in direct proportion to the length of time he or she remains enrolled. That is, the percentage of time during the period that the student remained enrolled is the percentage of disbursable aid for that period that the student earned. Institutional costs play no role in determining the amount of Title IV funds to which a withdrawn student is entitled. A student who withdraws after the 60 percent point of the enrollment term earns all Title IV aid disbursed for the period.

Examples of common return of Title IV funds situations are available from the Financial Aid Office located in the Walsh Administration Building.

All funds must be returned to federal programs before funds are returned to state or institutional aid programs and/or the student. This return of funds allocation will be made in the following specific order and will be applied to all students who have received Federal Title IV assistance:

1. Unsubsidized Ford Federal Direct Loan Program
2. Subsidized Ford Federal Direct Loan Program
3. Federal Perkins Loan Program
4. Federal Direct Plus Loan Program
5. Federal Pell Grant Program
6. Federal Supplemental Educational Opportunity Grant Program
7. Other federal, state, private, or institutional assistance programs, and
8. Student

## REFUND OF ROOM CHARGES

Students who reside in University residences for less than a full term will be assessed prorated room charges based on the schedule stipulated in the Student Housing Contract and will be charged a residence hall contract cancellation fee. Students who are evicted from, move from, or otherwise withdraw from University housing during an academic term and who have not been released from the contract will continue to be assessed room charges for the remaining portion of that term.

## FINANCIAL AID

Santa Clara University maintains a broadly based program of financial assistance for its students. Administered by the Financial Aid Office, this resource helps bridge the gap between the cost of education and what parents and students can reasonably contribute.

The financial need of each family is estimated from information supplied on the Free Application for Federal Student Aid (FAFSA) in combination with the College Scholarship Service (CSS) Financial Aid PROFILE form.

A financial assistance package is prepared for the student based on this estimate and subject to the amount of total aid dollars available and any adjustments made by the Financial Aid Office. Depending on the student's eligibility, an aid package may include any combination of the following: scholarships, grants, loans, or part-time on-campus employment.

Financial help from the University and other sources should be viewed as supplementary to the efforts of the student and family. Santa Clara University believes that the maximum effort to assist students with college expenses rests with the family. Working together, families and the University can ensure that although the cost of a college education is high, it need not be prohibitive.

More complete information about the University's financial aid program is available in the Student Financial Services publication, *Affording a Santa Clara Education*, and also on the Santa Clara Web site at www.scu.edu/sfs/fao/. Specific questions should be addressed to the Financial Aid Office (408-554-4505).

## Third-Child Family Grant

The University offers a special one-half tuition remission to families who have three dependent undergraduate students concurrently enrolled at Santa Clara. The program's conditions are:

1. All three students must be concurrently enrolled as undergraduates;
2. All three students must be dependent on parents;
3. Parents must apply for the program by submitting a letter to the Financial Aid Office requesting the Third-Child Family Grant along with a copy of their latest federal income tax return showing all three students as dependents; and
4. All financial aid deadlines should be followed when applying.

## Applications

Aid packages including any combination of scholarships, grants, loans, and on-campus employment may vary in dollar amount each year depending on the student's family financial circumstances. Packages are renewable annually provided the student fulfills the University's requirements and reapplies each year by the application priority deadlines indicated below. New undergraduate applicants with completed documents on file by February 1 preceding September enrollment should be notified of their aid eligibility no later than June 1. Undergraduate renewal applicants must reapply by March 2 each year and will receive notification of their aid eligibility prior to the beginning of fall term.

To apply for financial aid consideration, a student must submit the following documents by the indicated dates:

1. **Submit required documents**
   a. Free Application for Federal Student Aid (all students)..... February 1
   b. College Scholarship Service PROFILE (first-time applicants)..... February 1
2. **Submit supplementary documents (where applicable)**
   a. Immigration and Naturalization Service (INS) status document (eligible noncitizens) ..... May 1
   b. Student's U.S. tax returns, if requested..... May 1
   c. Parents' U.S. tax returns, if requested..... May 1
   d. Verification documents, if requested ..... May 1

## Qualifications

The selection of students to receive financial aid requires evidence of financial need. Once this criterion has been met, priority of consideration is given to applicants with the highest scholastic attainments.

Scholarship recipients are expected to maintain an overall grade point average (GPA) of 3.0. All other aid recipients must maintain a GPA of 2.0. All financial aid recipients must remain enrolled as full-time students (minimum of 12 quarter units) for each quarter in which aid is received and must make satisfactory progress toward a degree. Please refer to the Academic Standing section for specific criteria on good standing, the Student Classification section, and the "Limitations on Financial Aid Eligibility" insert that is enclosed with your award offer for specific criteria on normal progress. Financial aid may be terminated at any time for serious infractions of the University's rules and regulations. As a general rule, graduate and professional students will receive consideration for financial aid after undergraduate needs have been met. Ordinarily, financial aid is not available for noncitizens unless they are in the United States permanently and have made application for citizenship. It is the financial aid recipient's responsibility to notify the Financial Aid Office immediately of any changes in address, name, marital status, academic status, or family financial situation, or any other change which might affect aid eligibility.

Eligibility for financial aid is for a maximum of 12 quarters. Request for an extension of this maximum must be addressed in writing to the Financial Aid Office. All financial aid awarded will be distributed in equal installments to coincide with the number of academic periods in the year and will be placed as a credit on the student's account at the Office of Student Accounting Services.

## Loans

Because scholarships and grants are limited, many students applying for aid find it most advantageous to finance a portion of their education through a loan program. Among programs available to students are Federal Perkins Loans, Federal Direct Student Loans, and Federal Direct Parent Loans for Undergraduate Students (PLUS). Further information may be obtained by consulting the Student Financial Services publication, *Affording a Santa Clara Education*, and the Santa Clara Web site at www.scu.edu/sfs/fao/.

## Employment

The University maintains The Career Center on campus to help students secure part-time work. Students who receive financial aid are expected to contribute as much as possible from their own resources to assist in meeting their costs at Santa Clara.

## Tentative Financial Aid Deadlines

Please consult the current edition of *Affording a Santa Clara Education*, available from the Financial Aid Office and www.scu.edu/sfs/fao/.

- Winter and Spring quarter transfer and new recipients: December 1 preceding enrollment
- New scholarship and grant consideration: February 1 preceding fall enrollment
- New Perkins Loan and Work-Study Program: February 1 preceding fall enrollment
- Cal Grants: March 2 preceding fall enrollment
- Financial aid renewal: March 2 preceding fall enrollment
- Pell Grants (apply as early as possible): May 15 of the academic year for which you are requesting aid.

These deadlines are tentative and should be confirmed with the Financial Aid Office.

## Veterans and Veterans' Dependents Assistance

Santa Clara University is listed by the Department of Veterans Affairs as qualified to receive students under Chapter 35 (veterans' dependents—son or daughter with parent deceased or 100 percent disabled, widow of any person who died in the service or died of a service-connected disability, or wife of a veteran with a 100 percent service-connected disability); Chapter 31 (rehabilitation); Chapter 30/1606 (active duty Montgomery G.I. Bill); Chapter 34 (old G.I. Bill); and Chapter 32 (Post-Vietnam Era Veterans' Educational Assistance Program [VEAP]). Those interested in attending under any of these chapters should contact the Veterans Administration Office in their locality to determine eligibility for benefits, or visit the Veterans Administration Web site at www.va.gov.

The state of California provides a program for children of veterans who are deceased or disabled from service-connected causes. Application should be made to the California Department of Veterans Affairs, Veteran Service Division, 1227 O Street, Suite 101, Sacramento CA 95814. You can obtain an application on the Internet at www.educ.ca.gov.

Information regarding these programs may be obtained from the Santa Clara University veterans' counselor in the Student Records Office.

# 10

# Academic Regulations, Advising, and Learning Resources

## STUDENT RESPONSIBILITY

Students are personally responsible for knowing all the academic regulations affecting their program of study and for completing all degree requirements as set forth by the University, their College or School, and academic department(s). Failure to understand these regulations and requirements does not relieve a student of responsibility.

## GENERAL GRADUATION REQUIREMENTS

Candidates for a bachelor's degree must:

1. Complete a minimum number of quarter units as specified below for their program, no more than half of which may be satisfied with approved transfer credit;
   a. Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) in the College of Arts and Sciences: a minimum of 175 quarter units (a minimum of 197 quarter units for engineering physics majors)
   b. Bachelor of Science in Commerce (BSC) in the Leavey School of Business: a minimum of 175 quarter units
   c. Bachelor of Science (B.S.) in the School of Engineering: a minimum number of quarter units as specified by the major department
2. Complete a minimum of 60 quarter units of upper-division courses;
3. Attain an average of C (2.0) in their declared major and minor subjects and in their total course load;
4. Meet the residency requirement of a minimum of 45 units at the Santa Clara campus after achieving junior standing;
5. Fulfill the University Core Curriculum requirements; and
6. Fulfill the minimum course requirements of both their college or school and their major department.

Specific course requirements to meet each of these goals are outlined in the sections for each College or School.

## Academic Major

As one requirement for graduation, each student must declare and complete the requirements for one academic major in his or her School or College. Requirements for the majors can be found under the departmental listings for College of Arts and Sciences, Leavey School of Business, and School of Engineering. Students should declare a major by the end of their sophomore year. Students participating in study abroad programs during the academic year must declare a major before departing for their study abroad.

## Transfer Within the University

Students wishing to transfer from one school or college to another within the University must complete a Program Petition Form. The action taken on the petition will depend on the applicant's past academic record and on the availability of space within that school or college. Completed petitions must be filed with the Drahmann Center.

## Second Major or Academic Minor

A student may declare a second major or an academic minor by obtaining the approval of the relevant department chair or program director. The conditions governing the declaration of a second major or academic minor and the required form may be obtained from the Drahmann Center or the Student Records Office. Requirements for a second major or minor become as binding as those of a primary major and must be completed before a degree will be awarded.

A student may declare a second major in any department of the University with the exception that students in the Leavey School of Business may declare only one major in that school.

Minors are available in most departments in the College of Arts and Sciences and in some departments in the Schools of Business and Engineering. Their requirements may be found under the individual department listings for College of Arts and Sciences, Leavey School of Business, and School of Engineering. General minors in business and engineering are also available. Requirements may be obtained from the appropriate associate dean's office. Declaration of the general minor in business or engineering must be approved by the associate dean of that school.

A number of interdisciplinary minors are offered by the University. Descriptions and requirements can be found in Chapter 7 of this bulletin.

## Second Bachelor's Degree

A student may earn a second bachelor's degree but may not duplicate a degree (B.A., B.S.-Natural Science; B.S.-Social Science; BSC, B.S.-Engineering); those interested in a further program of study within their first degree are advised to work toward a second major.

For students whose first bachelor's degree is from Santa Clara, the conditions are (1) an academic record showing a strong probability of success in this undertaking; (2) a projected program of study that will amass at least 45 Santa Clara campus units

beyond the first bachelor's degree; (3) following the requirements in effect at the original matriculation date, provided the student is pursuing the second bachelor's degree concurrently or without interruption; and (4) written approval of the Director of the Drahmann Center submitted to the Student Records Office. Students returning after an absence of fewer than five years are subject to the above conditions, with the exception that they follow the requirements in effect upon reentry.

If more than five years have passed since the granting of the first bachelor's degree, a formal application for admission must be filed with the Office of Undergraduate Admissions. Candidates are subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of reentry.

All candidates whose first degree is from an institution other than Santa Clara must file a formal application for admission with the Office of Undergraduate Admissions and will be considered on a space-available basis. Candidates are subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of entry. At least half the units towards the second bachelor's degree must be earned at Santa Clara University.

Normally, financial aid other than student loans is not available to students seeking a second bachelor's degree.

### Honors at Graduation

The candidate for an undergraduate degree with a grade point average between 3.50 and 3.69 graduates cum laude; one with a grade point average between 3.70 and 3.89 graduates magna cum laude; and one with a grade point average of 3.90 or higher graduates summa cum laude.

Honors are based on all graded undergraduate courses attempted at Santa Clara University and courses taken elsewhere that are counted toward the fulfillment of a student's degree. No honors will be awarded above those merited by the student's record at Santa Clara. An indication of honors at graduation contained in the commencement program is unofficial. The final determination will be made after a review of all completed undergraduate courses counted toward the degree.

## REGISTRATION

Registration for classes precedes each academic term. The registration dates, procedures, and instructions are published in the quarterly undergraduate *Class Schedule.* An appointment time is provided to continuing students prior to each registration period. Financial arrangements for the payment of tuition and fees must be made prior to registration or as otherwise announced by the University.

The University reserves the right to deny registration to any student for reasonable cause.

### Course Numbering

Lower-division courses are numbered 1–99; upper-division courses, 100–199. In the College of Arts and Sciences and the Leavey School of Business most lower-division courses carry 4 units of academic credit, most upper-division courses carry 5 units. In the School of Engineering, unit values vary.

Students who have not earned 44 units (including transfer credit) may not enroll in upper-division courses without the written approval of the instructor and the chair of the department offering the course. This restriction does not apply to upper-division foreign language courses for which a student has demonstrated sufficient proficiency or to engineering courses in the major program.

## Administrative Withdrawal

Students who enroll in a course for which they are not eligible are subject to administrative withdrawal from that course. That is, prior to the end of the add/drop period, the instructor may notify the registrar to drop freshmen who registered in upper-division courses; to drop students who have not satisfied the prerequisite(s) stated in the bulletin or *Class Schedule*; or to drop students lacking the instructor's permission as specified in certain courses.

In addition, students who do not attend on the first day of class are subject to administrative withdrawal at the discretion of the instructor. However, because not all instructors exercise this option, students who have missed the first day of class should not assume that they have been dropped, and should formally withdraw if they no longer wish to take the course.

## Registration Changes

Through the first week of each term, students are permitted to alter their original registration schedule by following the regular procedures established for this purpose by the Student Records Office and stated in the quarterly *Class Schedule*. During the second, third, and fourth weeks of classes, a student may withdraw from a class without a W notation appearing on the academic record. From the fifth to the end of the ninth week of classes, a student is permitted to withdraw from a class by submitting to the Student Records Office a course withdrawal form signed by the instructor, but a W notation will appear on the academic record. No withdrawal is permitted during the final week of classes. Students who do not complete a course may receive a grade of F if they fail to withdraw formally.

## Unit Overload

Students' quarterly course load may not exceed 19 units unless their cumulative grade point average at Santa Clara is at least 3.3 or they are officially enrolled in the University Honors Program or they obtain written permission from the Drahmann Center. Students who do not meet the above criteria will not be registered for the additional courses. One 2-unit course or two 1-unit courses are not counted as overload units. Students, including Honors Students and those with a 3.3 grade point average, may add overload units only during the add period.

## Repetition of Courses

Certain kinds of courses, such as topic courses and performance courses, are repeatable, and students will receive a grade and units for each successful completion. Students should consult the chair of the department in which the course is offered to confirm that a given course may be repeated for credit.

Otherwise, students may only repeat a course in which they have received a grade of less than C–. In such cases, the grades of both the original and the repeated course are included in the calculation of the student's grade point average, but units are awarded toward graduation only once for each course passed.

## Independent Study

Under certain conditions, students may pursue independent study through directed reading, directed research, internships, or practica. To qualify, a student must have demonstrated a sufficient knowledge of the academic discipline involved to make independent study both possible and beneficial. No more than 20 units of independent study may be used to satisfy graduation requirements, and no more than 5 units total of independent study may be taken per term. Students must enroll for the term in which the independent study occurs.

***Directed Reading and Directed Research*** Directed Reading and Directed Research are limited to upper-division students who undertake a research project or other well-defined study beyond the scope of a regular course under the supervision of a full-time faculty member. Such work should be comparable to that required for courses of equivalent unit value.

***Internships and Practica*** Practical learning experience can be obtained through internships and practica. An internship is an approved work experience in a non-classroom environment, typically available only to upper-division students. Students who enroll in an internship for academic credit must fulfill specified academic requirements in addition to the responsibilities imposed by the organization hosting the internship. Practica provide practical experience in approved University programs and activities, such as participation on the school newspaper or in a theatre production. Some practica are available to lower-division students.

Students wishing to enroll in an independent study course must initiate the request for Independent Study with the instructor and submit the appropriate form, together with the required materials and approvals, to the Drahmann Center at least one week prior to registering for the course. The forms are available from the Drahmann Center and the Student Records Office.

## Auditing Courses

Matriculants (degree-seeking students) may audit one course in addition to their regular study load in a given academic quarter. Permission to audit a course will be given only at the end of the late registration period, and then only if space is available in the class. Although no credit is assigned for an audited course, the successful completion of an audit will be indicated on a student's transcript by the notation AUD. A maximum of three courses may be audited during the student's academic career.

For those students not enrolled full time, a $250 course audit fee is charged. Non-matriculants may not audit courses.

## Challenging Courses

Students may challenge certain courses to satisfy specific subject requirements for graduation. Although course requirements may be fulfilled by this means, a successful challenge neither earns any units toward the total needed for graduation, nor contributes to the fulfillment of the residency requirements.

To challenge a course, the student takes a special three- to four-hour examination on the material covered by that course and meets any additional requirements.

A student may petition to challenge any course listed in the *Undergraduate Bulletin* except those involving laboratory, studio, or specialized group work, and those whose descriptions in the catalog are followed by the letters NCX.

In order to be eligible to challenge a course, a student must (1) have completed at least one term at Santa Clara; (2) have a cumulative grade point average of at least 3.3; and (3) have received the permission of the instructor and the chair of the department in which the course is offered. The petition form is available in the Student Records Office. Only currently enrolled students are eligible to challenge a course.

Challenge examinations are arranged by the instructor. The petition form must be submitted to the Student Records Office at least two weeks prior to the examination.

A $100 fee is charged for each course challenged.

Challenged courses may not be graded P/NP, and no more than one course may be challenged each term.

## Attendance

Students are expected to attend all classes. Penalties for absences are left to the discretion of individual instructors. Students are held accountable for all assignments in each course, whether or not the assignments were announced during an absence. Students not in attendance on the first day of class are subject to administrative withdrawal from the course at the discretion of the instructor.

## Evaluation of Progress

Grade reports are issued only at the end of the term. Faculty members are expected to apprise students of their course progress at reasonable intervals. Some measurements of progress should take place in time to enable students to make reasonable decisions with respect to the fourth- and ninth-week withdrawal deadlines.

# ACADEMIC INTEGRITY

The University is committed to academic excellence and integrity. Students are expected to do their own work and to cite any sources they use. A student who is guilty of a dishonest act in an examination, paper, or other work required for a course, or who assists others in such an act, may, at the discretion of the instructor, receive a grade of F for the course.

In addition, a student found guilty of a dishonest act may be subject to sanctions up to and including dismissal from the University as a result of the student judicial process as described in the *Community Handbook*.

A student who violates copyright laws, including those covering the copying of software programs, or who knowingly alters official academic records from this or any other institution is subject to similar disciplinary action.

## GRADING SYSTEM

Grades reflecting the quality of a student's work are reported as follows: A (excellent), B (good), C (adequate), D (barely passing), F (not passing), P (pass), NP (no pass). The grades A, B, C, and D may be modified by (+) or (–) suffixes, except that the grade of A may not be modified by a (+) suffix. Grade point values per unit are assigned as follows: A = 4.0; A– = 3.7; B+ = 3.3; B = 3.0; B– = 2.7; C+ = 2.3; C = 2.0; C– = 1.7: D+ = 1.3; D = 1.0; D– = 0.7; and F and NP = 0. Unit credit, but not grade point credit, is awarded when the grade of P is assigned.

The University also uses the following marks: I (incomplete), AUD (audit), N (continuing work), NR (no grade reported by instructor—this notation is assigned by the Student Records Office), and W (withdrawn). No unit credit or grade point value is granted for any of these marks.

Students must achieve a grade point average of 2.0 in their declared major(s) and academic minor(s), as well as a cumulative grade point average of 2.0 or higher in all courses in order to be eligible for graduation. A grade point average is determined by multiplying each grade point value by the number of quarter units assigned to the course, adding these grade point units from all courses taken, and dividing this sum by the total number of quarter units for which letter grades were reported.

Student grade reports, posted at the end of each quarter, indicate the grade point average earned during the quarter just completed as well as the cumulative grade point average the student has earned to that point.

### Pass/No Pass Option

A junior or senior with a declared major may choose to take an elective course on a pass/no pass (P/NP) basis. (An elective course is one other than a University, school, college, department, or program requirement.) The pass/no pass choice can be made up to the final day of adding classes and is irreversible. (Courses offered only on a pass/no pass basis are not subject to the restrictions above.)

A grade of P signifies that the quality of work done is equivalent to a letter grade of C or higher, while a grade of NP denotes work at the level of C–, D, or F. Courses taken under the pass/no pass option will fulfill graduation unit requirements but do not affect grade point averages.

Students may elect only one course per quarter on a pass/no pass basis. The units accrued for up to a maximum of six eligible courses can be applied to the graduation unit requirement.

### Incomplete

A student may receive a mark of incomplete (I) in a course if, because of extraordinary circumstances beyond the student's control, some essential portion of the assigned work has not been completed before the final examination. An Incomplete Contract must be completed and signed by both the student and the instructor before an I will be assigned. The unfinished work must be completed and given to the course instructor within three weeks of the beginning of classes in the next scheduled term (not the student's next term of enrollment), excluding summer session, unless extraordinary circumstances require an extension. A request for an extension must be submitted in writing by the instructor and approved by the registrar within the three-week period; the extension should not be for longer than two academic quarters after the I was assigned, excluding summer session.

### Change of Grade

Only the instructor in charge of a course may assign grades. All grades become final when they have been assigned and reported to the Student Records Office. An instructor may report to the Student Records Office a correction of a final grade only if a clerical or procedural error was made in assigning, transmitting, or recording the original grade. A grade may not be changed as a result of reevaluation, reexamination, or the submission of additional work after the term ends. Any grade change must have the approval of the department chair and the associate dean of the student's school or college. No grade may be changed after one year.

An instructor may submit a letter grade to replace the mark of NR no later than one year after the end of the term in which the course was offered.

## STUDENT CLASSIFICATION

Students are classified by the number of quarter units they have completed with passing grades. Lower-division students are considered freshmen if they have completed fewer than 44 units, and sophomores when they have completed 44 but fewer than 88 units. Upper-division students are considered juniors when they have completed at least 88 but fewer than 131 units, and seniors when they have completed at least 131 units.

The University does not admit degree-seeking students on a part-time basis. For academic purposes, full-time status requires a minimum of 12 units per term. For tuition purposes, however, a lower-division student is defined as full time if the student is taking at least three term courses, and an upper-division student is defined as full time if the student is taking at least two term courses, regardless of the unit value of the courses.

Continuing enrollment at the University as a part-time student requires approval by the Drahmann Center. Generally, students enrolled less than full time, but at least half time (6 units), may be eligible only for Federal Direct Loans.

Students admitted to the University as non-matriculants (not seeking a degree) may enroll in courses after approval by the Drahmann Center, and then only on a space-available basis.

## ACADEMIC STANDING

To be in good academic standing, a student must normally be enrolled full time, maintain a cumulative grade point average of at least 2.0 based on all courses taken at Santa Clara, and must have completed at least the minimum number of units, as specified below. Failure to meet these conditions may result in academic probation or disqualification from future registration at the University.

### Probation

Students who have completed at least three quarters of academic work at Santa Clara or elsewhere are subject to academic probation if their cumulative grade point average is lower than 2.0 based on all courses taken at Santa Clara. Students who have not yet completed three quarters of academic work at Santa Clara or elsewhere normally are not subject to academic probation as long as their cumulative grade point average is at least 1.6 based on all courses taken at Santa Clara.

Students are also subject to academic probation if they fail to make reasonable progress toward their degree. Thus, they are subject to academic probation if:

1. They have not completed at least 36, 76, 115, or 160 quarter units by the end of their 3rd, 6th, 9th, or 12th quarters of residency, respectively; or
2. They have completed fewer than 36 quarter units in the past 3 quarters of residency.

### Disqualification

Students are subject to disqualification from further registration at the University if:

1. They remain on probation for more than 2 consecutive quarters; or
2. Their cumulative grade point average falls below 1.6; or
3. They complete fewer than 30, 64, 100, or 150 quarter units by the end of their 3rd, 6th, 9th, or 12th quarters of residency, respectively.

### Reinstatement

Reinstatement after disqualification from the University is rarely permitted. It requires favorable action by the Committee on Reinstatement in consultation with the dean of the student's school or college.

Requests for reinstatement should be addressed to the Drahmann Center and must include a description of any activities during the period of disqualification that would indicate that an improved academic performance can be expected in the future. Ordinarily, a student may not apply for reinstatement within a year of the date of disqualification. The application will be considered only if the student's academic deficiencies can be removed within a reasonable time.

### Withdrawal

Students who wish to withdraw from the University during a quarter must complete a withdrawal form and an exit interview in the Drahmann Center. If the formal requirements for withdrawal are met, the student's registration will be canceled without academic penalty. A withdrawal notation (W) will be assigned for each course from which the student withdraws after the fourth week of the quarter. Students who leave the University during a quarter without formally withdrawing are subject to failing grades in all courses in which they were registered and are ineligible for refund of fees.

Any student leaving the University at the conclusion of any quarter also should complete the standard withdrawal process.

No withdrawal, either during or at the end of a quarter, will be considered complete unless the student has met all the financial obligations at the University. Students attending the University on deferred payment plans or with student loans must also clear their financial obligations with Student Loan Services. Students who have unpaid University bills will not receive academic transcripts until their account has been settled.

### Reenrollment

Students who leave the University may return without special permission if they meet all of the following conditions:

1. They left the University in good standing;
2. They plan to return to the same University School or College;
3. They are returning within five years; and
4. They notify the Student Records Office in writing. If the notification is received in time, they may participate in advance registration.

Reenrolling students should consult with a University advisor in the Drahmann Center to discuss their academic plans. Students who have attended another college or university are required to forward to the Student Records Office an official transcript of all work completed during their absence.

Students who do not meet the conditions above must seek permission to reenroll from the Drahmann Center. Reenrolling students may be subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of reentry.

## UNITS TAKEN AT OTHER INSTITUTIONS

After enrolling at Santa Clara, students may earn no more than 10 quarter units, of free elective credit only, at other regionally accredited colleges or universities to count toward graduation. Specifically, these units may not be counted as fulfilling a University Core, college or school, department, or program requirement. Credit will be awarded only for courses with a grade of C or higher. No credit will be awarded for courses with a CR, P, or S grade. All courses require *prior* approval from the Drahmann Center and the chair of the department offering the equivalent SCU course. Grades for units earned at other institutions are not included in a student's Santa Clara academic history, nor do they affect the Santa Clara grade point average.

Units and grades earned in Santa Clara University-affiliated studies abroad and other off-campus affiliated programs are included in the student's Santa Clara academic history and grade point average and may be used to meet Santa Clara requirements provided prior approval is obtained from the appropriate department chair or program director and the Office of International Programs. They do not, however, satisfy the University residency requirement.

It is the student's responsibility to learn whether a study abroad or other off-campus program is SCU-affiliated or approved for Santa Clara credit. Lists of affiliated, approved, and disapproved study abroad programs are maintained in the office of International Programs.

*Note: Concurrent enrollment at another academic institution is not allowed. Approval for an exception will be granted by the Drahmann Center only for extraordinary reasons.*

## ACADEMIC ADVISING

### Academic Advisor

Each incoming student is assigned to a specific faculty member in the student's school or college who serves as the student's academic advisor. Usually the assignment is made according to the student's declared major or according to a general academic interest indicated by the student. As needed, students may meet with a University advisor in the Drahmann Center. Upon request, the Drahmann Center will also reassign an undeclared student to another faculty advisor should personal or academic considerations warrant such a change. Students who have declared a major should ordinarily consult the chair of their major department for a change of faculty advisor. Students are encouraged to consult regularly with their faculty advisors to discuss academic goals, develop academic plans, get clarification on academic regulations, review progress towards graduation, and explore career options.

### Required Advising

All students who have not yet petitioned to graduate must meet with their academic advisors during the published advising period in May of each year. Those who do not comply will not be permitted to register for the next term. Procedures for setting meetings with advisors in the College and Schools may vary. Students should check with their assigned advisor for more complete information.

## JOHN B. DRAHMANN ACADEMIC ADVISING AND LEARNING RESOURCES CENTER

The Drahmann Center, located in Benson Memorial Center 214, provides and coordinates academic services for undergraduates at all stages of their education at Santa Clara University, and provides services for international students and students with disabilities at any level.

The Drahmann Center is the home of Orientation Programs. Advisors and staff at the Center work with the University community to introduce students to Santa Clara University, to provide initial advising for first-time course registration, and to help new students adjust to the demands and opportunities of University life.

Because the student-faculty relationship is the foundation of the educational experience at Santa Clara, all new students are assigned faculty advisors early in their first term at the University. Faculty advisors have primary responsibility for helping students successfully navigate their academic careers. The Drahmann Center provides the resources to support and augment this fundamental relationship in a number of ways.

University advisors in the Drahmann Center assist students in working effectively with their instructors, with petitions for exceptions to University policy where unusual circumstances warrant, and with resolving special problems. The Center offers learning resources in the form of individual and group tutoring, as well as workshops on learning strategies, study skills, and time management. The Drahmann Center also provides academic services in collaboration with the Residential Learning Communities.

It is in the Drahmann Center that students with disabilities receive assistance with access and accommodation, verification of documentation, and communication with faculty. International students are provided assistance with visas and other matters pertaining to immigration law as well as general support. The Drahmann Center collaborates with the Center for Multicultural Learning to ensure students of color and first-generation students the full support of the University's resources and to provide all students the opportunity for multicultural learning experiences.

Information on pre-professional advising for students interested in law and the health sciences can be found in Pre-Professional Preparation. The program for students interested in teaching at the elementary level is contained in the Liberal Studies major. Detailed information for those who wish to teach at either the elementary or the secondary level can be found in Teacher Preparation at Santa Clara University. Faculty are generally the best sources of information on the nature and quality of graduate programs in their own areas. The Drahmann Center maintains information on nominated graduate fellowships (Fulbright, Goldwater, Marshall, Mellon, NSF, Rhodes, and Truman). The Center also works with the Career Center on programs related to graduate study and career counseling.

The Drahmann Center also participates with other programs and organizations across campus in the integration of advising and student development services. Among these are the Residential Learning Communities, the Counseling Center and the Centers for Multicultural Learning and Student Leadership, and the Career Center.

## OTHER RESOURCES AND SERVICES

### Career Center

The Career Center provides students with a variety of services and resources to help them clarify, plan, and achieve their career goals. Counselors meet with students individually and in groups to reflect on attributes such as personality, skills, interests, and values, and to learn to represent those attributes effectively on resumes, during interviews, and throughout the life of their careers.

The Career Center also produces large events, such as job fairs, to enable students to meet with regional, national, and international employers who have an interest in hiring SCU students for internships, cooperative education assignments, volunteer positions, and permanent jobs. The Center's comprehensive on-campus interview program offers seniors the opportunity to interview with companies for post-graduate positions.

The Career Center's resource lab and its Web site, The Career Center Online (www.scu.edu/careercenter), offer thousands of resources on internships, jobs, career fields, and career management strategies.

## Computing Facilities

All registered students are provided with University networking and e-mail accounts when they arrive, and may use any of the general computing resources. Students are expected to read their e-mail regularly for important notices from University administrators. All residence hall rooms are equipped with a CATV connection and with Ethernet and telephone jacks for each student in the room. Residential Communication Consultants and a Student Help Desk provide technical support for both resident and off-campus students. Free noncredit short courses in application software are offered periodically. Available courses are listed at http://www.scu.edu/training/ and are announced quarterly by e-mail.

All full-time faculty members have a personal computer or workstation in their office, and computer use is a common element in all disciplines. E-mail is a frequent communication tool between students and between students and faculty. Many faculty place course-related materials on the University electronic reserve system (http://eres.scu.edu), where they are accessible 24 hours per day. The library system (http://sculib.scu.edu) provides complete access to the collections of the Orradre (University) and Heafey Law libraries, and serves as a gateway to the University's online resources, the combined collections of the LINK+ member institutions, and other services.

Although most students have their own computers, Santa Clara provides workstation and personal computing facilities to support educational programs. The main general computing labs are typically open from 8 a.m. to 2 a.m., Sunday through Thursday, with hours slightly reduced on weekends. Personal computers are concentrated in five general-purpose computing labs containing a total of nearly 200 computers (90 percent PCs, 10 percent Macintosh computers) loaded with various software packages for word processing, spreadsheet, database, presentation, and programming use. Each lab and classroom computer includes networking software to support Web browsing, Telnet, and FTP, including full access to the Internet. Additionally, there are a variety of classrooms outfitted with computers for teaching and learning, and numerous computing labs dedicated to specific academic disciplines. Students are allocated 200 pages per quarter of free printing from campus laser printers connected to the pay-for-print network. Please see http://it.scu.edu/resources.labs.shtml for a list of general-purpose and department-specific computer labs, and http://labs.scu.edu for more general information about student computing at Santa Clara.

The University is connected to the Internet via two high-speed connections with a total bandwidth of 55 megabits per second. Internet access from the Santa Clara campus is freely available to all students, faculty, and staff. Students living off campus

must make separate arrangements for Internet access from their residence. In addition to the computing labs and classrooms, network jacks are available in Orradre Library and Benson Center for laptop use. Portions of the University campus are covered by a wireless network (IEEE 802.11b, or Wi-Fi) which is gradually being expanded to cover the entire campus.

The School of Engineering Design Center has a network of 50 Hewlett-Packard and Sun high-end workstations grouped in two large labs. These workstations run either HP's UNIX or Sun's Solaris operating system. In addition, the Design Center houses three 24-seat PC workstation labs for a total of 72 Windows-based computers. Many of the PC workstations are configured to dual-boot with a choice of Windows 2000/XP or LINUX. Terminal emulation software allows all PCs to perform as X-terminals to access the HP and Sun workstations. All systems have large high-resolution color monitors or LCD displays and are connected by a 100Mbps-switched Ethernet network. The Design Center offers more than 25 major commercial software packages including computer-aided design (CAD) and analysis applications for civil, computer, electrical, and mechanical engineering, as well as a variety of programming languages. Advanced color printing, scanning, and plotting capability are available throughout the Design Center. The Design Center also offers a unique multimedia classroom/lab with projection screen capability for UNIX, LINUX, and Windows applications. The Design Center is open and available to students registered for engineering courses approximately 16 hours daily, seven days per week during the academic year. Details about the Design Center's facilities are at http://www.scudc.scu.edu.

Additional information about student computing facilities at Santa Clara is available at http://labs.scu.edu/.

## Media Services

Media Services, which is located in the Ricard Observatory and Varsi Hall, facilitates the application of media technology and non-print media resources to support and enhance teaching, learning, scholarship, and administrative services, as well as other campus activities and events.

Media Services offers a broad range of audio, video, and computer services. It will provide instructional technology such as AV or computer projection equipment to the classroom, create Powerpoint slides, or loan video equipment for a class project. All faculty, students, and staff have access to equipment and services for class use, class-related projects, and co-curricular use.

The Multimedia Lab in Varsi is equipped for faculty and students to create their own interactive courseware and/or CD-ROMs. Equipment includes a color scanner, slide scanner, video capture, CD-ROM press, digital Mpg camera, and removable storage options. Software, including Director, Authorware, Dreamweaver, Photoshop, and Cold Fusion, is available to support a variety of creative multimedia projects.

Web publishing at Santa Clara University is supported by the University Webmaster, Web Applications Developer, and student Web developers in the Media Services Department.

## Michel Orradre Library

The Michel Orradre Library provides library and information services in support of the University's undergraduate and graduate programs.

More than 735,000 books and bound periodicals, over 565,000 government publications, and nearly 762,000 microform units are in the library's collection.

The library also subscribes to more than 5,000 current serials (including over 100 titles in electronic format) and is a depository for U.S. and California government documents. In addition, the library provides access to many other information resources through the World Wide Web and other electronic services. All of the library's Web-based resources may be accessed by SCU students remotely, from computers elsewhere on campus, or from off-campus locations.

OSCAR, the online library system, is available via the campus network or the Web. Through LINK+, SCU students may quickly obtain books owned by a number of other California colleges and universities. Bronco Express, the library's interlibrary loan/document delivery service, is designed to quickly supply books and copies of articles which are not owned by Santa Clara University or available through LINK+. SCU students can make requests for both of these services electronically, using OSCAR.

Students can obtain basic information about the Orradre Library by visiting the library on the Web at http://www.scu.edu/library, or by using the many helpful printed publications and guides that are available in the library. Library staff can also provide information, answer questions, and assist students in locating and using resources. Reference service is available in the library, through "chat," or by e-mail. For more in-depth research advising, individual students or project teams can make advance appointments with a librarian. Instruction in finding, using, and evaluating library and information resources is also incorporated into a number of regularly scheduled classes. In addition, the library provides training on popular computer software programs for students and other members of the university community. To obtain information on current training offerings and to register for classes, students should access the training Web site at http://www.scu.edu/training.

Other services in the library include the University Archives; a student computer lab; photocopy machines; open reading areas; small-group study rooms equipped with network connections; and a number of individual study carrels.

During the academic year, the library is open seven days a week, for a total of 116 hours. Most books may be checked out to undergraduates for 21 days and to graduate students for 42 days. Course reserve materials are often made available electronically through ERes. Circulation periods for printed reserve materials are limited to two hours, one day (24 hours), three days, or seven days. A student's current University ID (ACCESS card) serves as a library card and must be presented to borrow materials or used to access online resources from off-campus locations.

## STUDENT RECORDS

University policy relating to student records complies with the Family Educational Rights and Privacy Act of 1974 (FERPA). Accordingly, the University may release directory information to any person on request, unless a student requests in writing that directory information be kept confidential. A student's directory information is designated as follows:

1. Name
2. Address (campus, local and/or permanent; e-mail)
3. Telephone number
4. Date and place of birth
5. Photographic image
6. Major field of study, classification, dates of attendance, expected graduation date, degrees, and honors received
7. Most recent previous educational institution attended
8. Participation in officially recognized activities, including intercollegiate athletics
9. Height and weight of participants on intercollegiate athletic teams

During the registration period and throughout the academic year, students may request in writing, through the Student Records Office, that directory information be kept confidential. Once filed, the request remains in effect until the beginning of the next academic year, or a shorter period, if designated by the student. Graduating students must notify the Student Records Office in writing to remove the non-disclosure notation from their record.

Certain records are excluded by law from inspection, specifically those created or maintained by a physician, psychiatrist, or psychologist in connection with the treatment or counseling of a student. Parents' financial information, including statements submitted with scholarship applications, is also excluded by law from inspection. Third parties may not have access to educational records or other information pertaining to students without the written consent of the particular student about whom the information is sought.

Former or current borrowers of funds from any Title IV student loan program should note carefully that requests for nondisclosure of information will have no effect on preventing Santa Clara University from releasing information pertinent to employment, enrollment status, current address, and loan account status to a school lender, subsequent holder, guarantee agency, U.S. Department of Education, or an authorized agent.

Students have the right to inspect and review their educational records at the following offices:

1. Official academic records, including application forms, admission transcripts, letters of acceptance, and a student's permanent academic record are on file and maintained in the Student Records Office.
2. Working academic files are also maintained by the Drahmann Academic Advising and Learning Resources Center.
3. Records related to a student's nonacademic activities are maintained in the Office of Student Life.
4. Records relating to a student's financial status with the University are maintained in the various student financial services offices.

Students have the right to request the amendment of their educational records to ensure that they are not inaccurate, misleading, or otherwise in violation of the student's privacy or other rights. Students may direct complaints regarding academic records to the dean of the college or school in which they are enrolled, to the dean of Enrollment Support Services, or to the University Registrar. In addition, students have the right to file with the U.S. Department of Education a complaint concerning alleged failures by Santa Clara University to comply with the requirements of FERPA. Written complaints should be directed to the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Ave., S.W., Washington, D.C. 20202-4605. Copies of Santa Clara University's institutional policy are available on the University's FERPA Web site at www.scu.edu/ferpa/ or from the Student Records Office, Walsh Administration Building.

## STUDENT RIGHT TO KNOW ACT

The U.S. Department of Education requires universities that receive Title IV funding to disclose certain information, including institutional graduation rates, athlete graduation rates, financial assistance awarded, and crime statistics. Information presented in compliance with this act is made available to assist current and potential students and employees in making informed decisions regarding their attendance or employment with Santa Clara University. For a complete listing of information available under this act, please visit the Web site: http://www.scu.edu/srk.

If you prefer to view a hard copy of the report, you may obtain one by requesting that a copy be mailed to you by writing to: Student Records Office, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053-0602.

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# Campus Life

## CAMPUS MINISTRY

Campus Ministry strives to be a leaven within the University community so that the Living God may be present to all people: students, staff, faculty, and alumni. In keeping with the Jesuit tradition of developing the whole person, and with the ideal that all of us be people for others, Campus Ministry seeks to facilitate growth in individuals and the community by its presence, programs, and services. The Campus Ministry staff reflects the reality of the Church today: a team of women and men—lay, religious, and priests—who encourage all members of this community to deepen their religious commitment in "the service of faith, of which the promotion of justice is an absolute requirement" (Decree 4, 32nd General Congregation of the Society of Jesus).

To attain this vision, Campus Ministry offers the University community a variety of programs: liturgies and other sacramental celebrations, retreats, counseling and spiritual direction, educational forums, interfaith sharing, and Bible studies. We collaborate with all segments of the community in the planning and execution of our programs.

In all of this, Campus Ministry is guided by the words of the prophet Micah: "This is what the Lord asks of you, only this: to act justly, to love tenderly, and to walk humbly with your God."

## CENTER FOR MULTICULTURAL LEARNING

The Center for Multicultural Learning advances multicultural education and works toward improving the climate of diversity for all students, faculty, and staff. The center fosters and supports partnerships among University constituencies, including students, administration, faculty, staff, alumni, families, external communities, and the business and professional community. Within the University, partnerships with underrepresented students assist them to reach their full potential as learners and to integrate their academic work with their lives outside the classroom. Partnerships with faculty and staff attempt to provide a fully integrated educational experience for all students. Partnerships with the external community help underrepresented students prepare for college and support the University's efforts to educate all students to diversity issues in society, business, and government and for life in a global society.

## CENTER FOR STUDENT LEADERSHIP

The Center for Student Leadership is dedicated to providing high quality leadership education through formal training and experiential opportunities in an integrated academic environment. Established in 1993, the Center is a resource dedicated to enhancing your leadership potential. The Center directly educates for leadership in the Jesuit tradition. The staff of scholar-practitioners provides programs and services that embrace the values of social justice, citizenship, ethical decision making, service to others, and diversity. The Center for Student Leadership supports and advises several types of student groups. They include over 80 Registered Student Organizations (Clubs), four Class Boards, and eight Chartered Student Organizations (CSOs). Students interested in leadership programs or joining student organizations are encouraged to visit the Center in Benson Memorial Center, Room One, by telephone at 408-554-4745, or on the Web at www.scu.edu/csl.

## COUNSELING CENTER

The Counseling Center, located in the Benson Memorial Center, offers free professional counseling to all undergraduate and graduate students. Confidential psychological counseling in a supportive atmosphere is designed to help students develop greater self-understanding and become more personally effective. Some of the concerns that students discuss with counselors include stress, depression, sexuality, academic motivation, individual identity, family, friendship, and love relationships. The special issues of minority and international students are recognized. In addition to individual, couples, and family counseling, the center frequently offers small groups and workshops on topics of general interest.

Students in crisis or with urgent needs can be seen immediately on a walk-in basis when the Center is open. Regular appointments are made through the receptionist, and clients can be seen within one week by calling 408-554-4172. Counseling hours are Monday through Friday, 8 a.m. to 5 p.m., and some evenings by appointment.

## COWELL STUDENT HEALTH CENTER

Cowell Student Health Center is located next to the Leavey Activities Center and the tennis courts. Santa Clara University undergraduate students may receive services by appointment, with no charge for office visits. There may be a charge for laboratory tests and medicines. The health service is staffed with a full-time physician, nurses, practitioners, and medical assistants who care for a variety of illnesses and injuries. In addition there is a part-time sports medicine physician, psychiatrist, physical therapist, and nutritionist.

All full-time undergraduates are required to complete a pre-entrance health history and have a physical examination by their personal medical practitioner prior to arrival at the University.

All full-time undergraduates are also required to carry health insurance. The student may choose to carry their own private insurance or the University-sponsored health insurance. Health insurance is needed to cover expenses incurred for outside referrals and x-rays, for example. If any charges are generated by a visit to Student Health

Center, a bill will be given to the student to send to his or her insurance company. Enrolled full-time undergraduates can use the Health Center regardless of which health insurance they carry.

Cowell Student Health Center is open Monday through Friday during the time undergraduates are in session. Cowell is closed during the summer.

## HOUSING AND RESIDENCE LIFE

The University maintains residence halls accommodating approximately 2,250 students. Residence hall rooms are furnished with extra-long twin beds, desks, chairs, chests, bookshelves, and closets. Most residence halls offer traditional double-occupancy rooms and common bath facilities; most student rooms in these halls have sinks. Newer halls offer suites and apartment-style accommodations with bathrooms en suite. Residence halls are coeducational. There are common lounge areas, study rooms, television and recreation rooms, kitchen and laundry facilities, and other services. Each student room is also networked for voice, video, and on-line computer connections.

Both professional and student staff live in campus housing and are committed to providing an atmosphere conducive to effective community living. The goal of the staff is to provide a living-learning environment that encourages academic achievement while assisting each individual student and the resident community in their development. All freshman students live in Residential Learning Communities that combine Core Curriculum courses, a common residence, and co-curricular activities.

Students who wish to apply for accommodations in University housing should submit an application and contract with the required housing prepayment to the Office of Housing and Residence Life. New first-year students submitting the required contract and prepayment by the designated deadline are guaranteed accommodations in University housing. Transfer students are accommodated only as space permits. If a housing reservation is canceled, the prepayment will be forfeited in accordance with the refund schedule. Returning upper-division residents are assigned University housing in accordance with the housing room selection and assignment process.

Requests for applications and other correspondence regarding student housing should be addressed to the Office of Housing and Residence Life.

## BENSON MEMORIAL CENTER

The Robert F. Benson Memorial Center is the hub of campus life. The Benson Memorial Center is designed to meet the various needs of students, faculty, staff, alumni, and guests, and to provide an environment for the education of the whole person that continues outside the classroom. Among the many services and facilities available are the Information Desk, Market Square, Mission Bakery and Terrace Cafe, Shapell Lounge, meeting rooms, Mission City Federal Credit Union, the bookstore, and the Post Office. In addition, a number of student services, offices of undergraduate student government, and various student organizations are housed in the center. Central to late night activities is the Bronco, featuring food, Internet connections, TVs, programs, pool tables, and nightly entertainment.

## DE SAISSET MUSEUM

The de Saisset Museum includes American, European, African, and Oriental art, as well as historically important objects from the early days of Mission Santa Clara. In addition to its permanent collection, it features special exhibitions of traditional, modern, and contemporary art.

## KIDS ON CAMPUS

Kids on Campus is the University childcare and preschool center for children between six weeks and five years of age. Children of faculty, staff, and students are eligible for enrollment. The center is a cooperative under the supervision of a volunteer committee of a parent board with a small staff of paid employees and university students. It is also used occasionally for practicum experiences by students in psychology and education courses. The preschoolers benefit from a program that provides a safe, loving, and creative learning environment that enhances the physical, mental, social, and spiritual growth of each child. Because space is limited, it is recommended that applicants sign up on the waiting list as soon as possible.

## LEAVEY CENTER

The Leavey Center is a popular multiuse facility that features a 5,000-seat arena. The Leavey Center is named after the founder of Farmers Insurance, the late Thomas E. Leavey, who graduated from Santa Clara University in 1922. The center is the home to SCU Broncos men's and women's basketball and women's volleyball teams.

## PAT MALLEY FITNESS AND RECREATION CENTER

The Pat Malley Fitness and Recreation Center opened September 1999 to provide a gathering place for campus fitness enthusiasts of all levels and interests. The 44,000-square-foot Malley Center includes a 9,500-square-foot weight room equipped with state-of-the-art cardiovascular machines, free weights, and weight machines. There are three courts for basketball, volleyball, and badminton. Additional space includes a multipurpose room for aerobic and martial art classes, locker/shower rooms with dry heat sauna, Campus Recreation offices, and the Wellness program office. Valid ACCESS card or VIP card is required for use of all recreational facilities. Facility hours and campus recreation program information is available at the Malley Center service desk.

## LOUIS B. MAYER THEATRE

The 500-seat Louis B. Mayer Theatre is designed to provide the traditional proscenium stage common to most theatres, as well as an orchestra pit and thrust elevators that can be raised or lowered electrically. In a remarkably simple procedure, a wall is moved, a few seats are relocated, and the main theatre is reoriented to a new dramatic form that extends the stage into the auditorium so that the audience surrounds the action on three sides.

Mayer Theatre also has a special floor constructed for dance, as well as a large movie screen and film projector.

The Fess Parker Studio Theatre, housed within the Mayer Theatre complex, has no fixed stage or seating. Its black-box design, complete with movable catwalks, provides superb flexibility in an experimental setting.

## MUSIC AND DANCE FACILITY

The music and dance facility has a 250-seat recital hall where students, faculty, and guest artists offer a variety of choral and chamber music performances. The music area of the building holds a large rehearsal hall, electronic media lab, library of recordings and scores, and seminar, conference, and practice rooms.

The dance area of the building contains two dance studios for classes, student rehearsals, and performances, as well as dressing rooms and conference space.

## CHARTERED STUDENT ORGANIZATIONS

***Activities Programming Board*** The Activities Programming Board provides quality social and educational events, programs, and leadership opportunities. Get involved with APB as a paid staff member or as a volunteer with homecoming, concerts, comedians, speakers, dance lessons, recreational and educational trips, and boat dances. For more information, stop by Benson Center, Room One, or call 408-554-4855.

***Associated Students of Santa Clara University*** Associated Students of Santa Clara University is the undergraduate student government organization which is divided into the executive, legislative, and judicial branches. You can serve in a paid or volunteer position on Senate, Student Court, a Class Board, a University Committee, or as a club leader. For more information, stop by the ASSCU office in Benson Center, Room One, or call 408-554-4410.

***KSCU*** The mission of KSCU is to provide hands-on radio broadcasting experience to students and community members. The staff of KSCU operates all aspects of an FM radio station in accordance with SCU's mission and goals and the Federal Communications Commission regulations. KSCU provides a wide range of leadership opportunities in a variety of areas, including music, budgeting, fundraising, promotions, management, and sports broadcasting. If you are interested in becoming a DJ or volunteering at KSCU, please phone 408-554-KSCU (5728) or fax 408-554-5738.

***Multicultural Center*** Multicultural Center Programming Board provides programming and program support for people of diverse ethnic backgrounds and the campus community. The MCC has more than 500 participating members and houses eight clubs, including: Asian Pacific Student Union, Barkada, Chinese Student Association, Igwebuike, Intandesh, Ka Mana 'o O Hawaii, MEChA-El Frente, and the Vietnamese Student Association. To get involved you can serve in one of the paid positions or volunteer as a board member, club leader, or event assistant. For more information, visit the MCC in Benson Center's Shapell Lounge, or call 408-554-2781.

**The Santa Clara *Newspaper*** *The Santa Clara* is the University's undergraduate weekly newspaper. *TSC* serves as an informative and entertaining student-run campus publication. Get involved in one of the paid or volunteer positions as a writer, editor, photographer, or member of the business staff. And don't forget, you can always write a letter to the Editor! For more information, stop by Benson Center, Room 13, or call 408-554-4852.

**The Santa Clara Review** *The Santa Clara Review* was founded in 1869 and is the University's biannual literary magazine. Submissions are drawn from students, faculty, staff, and artists outside the University community. The *Review* is committed to the development of student literary talent in editorial knowledge and creative writing skills. There are several paid positions and opportunities to volunteer in the areas of poetry, fiction, non-fiction, art, and management. You are also encouraged to submit your pieces for publication. Visit the *Review* in Benson Center, Room 16, or call 408-554-4537.

**The Redwood** *The Redwood* is the University's century-old yearbook. *The Redwood* offers paid and volunteer positions in writing, design, photography, and management. Students at-large are encouraged to participate by contributing photos and writings. For more information, visit them in Benson Center, Room 11, or call 408-554-4045.

***Santa Clara Community Action Program*** Santa Clara Community Action Program is a community-based, volunteer service organization where you can apply your education to social service. SCCAP promotes social awareness, leadership for social justice, and compassion. To get involved, apply for one of the paid positions or volunteer with programs like Special Olympics, Senior Connection, tutoring and education, or the Community Garden. For more information, visit SCCAP in Benson Center, Room 15, or call 408-554-4192.

***Registered Student Organizations (Clubs)*** Currently through the Center for Student Leadership, the University supports more than 80 academic cultural, honor, religious social/political action, and sports clubs. The Center advises clubs, provides leadership development resources, supports program planning, and is the signatory authority for all club contracts. For information about club rights and responsibilities, refer to the University's Community Handbook and the CSL Web site at www.scu.edu/csl/vision/policies.cfm.

## STUDENT CONDUCT CODE

For the most current information on the student conduct code and all policies and procedures regarding the student judicial system, please refer to the following Web site: http://www.scu.edu/studentlife/handbook.

# Accreditations and Memberships

## 2003–2005

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Accredited by the American Assembly of Collegiate Schools of Business International Association for Management Education (Undergraduate and Graduate Programs and Department of Accounting)

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# Abbreviations

**ACTG**
Accounting

**AERO**
Aerospace Studies

**AMTH**
Applied Mathematics

**ANTH**
Anthropology

**ARTH**
Art History

**ARTS**
Studio Art

**ASCI**
Arts and Sciences

**ASIA**
Asian Studies

**AUD**
Audit

**BIOL**
Biology

**BUSN**
Business Administration

**CENG**
Civil Engineering

**CHEM**
Chemistry

**CHIN**
Chinese Studies
(in Modern Languages and Literatures)

**CLAS**
Classics (including Latin and Greek)

**COEN**
Computer Engineering

**COMM**
Communication

**COST**
Community Studies

**DANC**
Dance (in Center of Performing Arts)

**ECON**
Economics

**EDUC**
Education

**ELEN**
Electrical Engineering

**ENGL**
English

**ENGR**
Engineering

**ENVS**
Environmental Studies

**ETHN**
Ethnic Studies

**FNCE**
Finance

**FREN**
French and Francophone Studies
(in Modern Languages and Literatures)

**GERM**
German Studies
(in Modern Languages and Literatures)

**GPA**
Grade Point Average

**HIST**
History

**HNRS**
University Honors Program

**I**
Incomplete

**INTL**
International Studies

**ITAL**
Italian Studies
(in Modern Languages and Literatures)

**JAPN**
Japanese Studies
(in Modern Languages and Literatures)

**LBST**
Liberal Studies

**MATH**
Mathematics
(including Computer Science)

**MECH**
Mechanical Engineering

**MGMT**
Management

**MILS**
Military Science

**MIS**
Management Information Systems

**MKTG**
Marketing

**MLAC**
Modern Literature and Culture

**MRST**
Medieval and Renaissance Studies

**MUSC**
Music (in Center of Performing Arts)

**NP**
No Pass

**NR**
Grade Not Recorded

**NRX**
Not Subject to Challenge

**OMIS**
Operations and Management
Information Systems

**P**
Pass

**PERF**
Performance Studies
(in Center of Performing Arts)

**PHIL**
Philosophy

**PHYS**
Physics

**POLI**
Political Science

**PSYC**
Psychology

**RLC**
Residential Learning Community

**RSOC**
Religion and Society
(in Religious Studies)

**SCTR**
Scripture and Tradition
(in Religious Studies)

**SOCI**
Sociology

**SPAN**
Spanish Studies
(in Modern Languages and Literatures)

**TESP**
Theology, Ethics, and Spirituality
(in Religious Studies)

**THTR**
Theatre (in Center of Performing Arts)

**W**
Withdrawal

**WGST**
Women and Gender Studies

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# Santa Clara University

## POLICIES

**For information: 408-554-5251**

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Markkula Center for Applied Ethics
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